

4 'Home Furnishings' Shows Will Precede Industry Exhibit

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Chicago. A number of representative manufacturers of electrical appliances—including household refrigerators and unit air conditioners—have reserved space in these shows.

At the Stevens hotel from Jan. 8 to 14 the National House Furnishing Manufacturers Association will stage its twelfth national exhibit. A rival group, the House Furnishing Manufacturers Association of America, will hold its show at the Palmer House during the same week.

Also during this week the Merchandise Mart will promote the housefurnishings exhibits of the manufacturers who maintain permanent showrooms in the mart. Special educational exhibits and other attractions are to be staged during this special house furnishings week. This show, labelled the International Home Furnishings Market, will hold over until Jan. 21.

The Furniture Mart will stage a similar exhibition, with emphasis on "heavy" appliances (such as refrigerators and unit air conditioners) also at this time.

Between the four shows, it is expected that nearly all the appliance manufacturers will exhibit their 1939 offerings.

New England Jobbers To Meet In Chicago

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was decided to hold a separate sectional meeting at that time.

Jobbers from other sections of the country and Canada are invited to attend this sectional meeting. Mr. Shepherdson says, to discuss problems and business that the association handles, or any other matter of common interest that may be brought up.

"During the time that our New England Association has been in existence," he says, "we have had some very interesting exchanges of ideas and price discussions with our manufacturers."

"It has proven quite definitely that when a group of companies discuss their problems with the manufacturer, the outcome is decidedly advantageous to both groups. There is usually a reason for something that is successful, and we feel that, due to the smaller numbers that form a sectional group, action can be taken more quickly and the root of the trouble straightened out more readily."

Several New England jobbers also were present at the recent refrigeration service engineers' convention in Buffalo, and came back with the recommendation that a closer contact and friendship be encouraged between jobbers and sectional service men's groups. It was the jobbers' opinion that, since both themselves and service men are striving for the same goal, better service to the consumer, closer association of the two groups would aid greatly in bringing this about.

In issuing a call to all jobbers to attend the convention in Chicago in January, the New England Association says:

"We hope that the refrigeration jobbers in other parts of the United States and Canada feel as enthusiastic about our coming convention as we do, because, unless we all support our national association, we, as a collective group, will not get very far."

Washer Week Drive Boosts Oct. Sales To '37 Level

CHICAGO—National Washer and Ironer Week, a country-wide concerted sales drive conducted by the industry, brought October shipments on a parity with 1937 figures for the first time this year, it is reported by J. R. Bohnen, executive secretary of the American Washer and Ironer Manufacturers Association.

August to October shipments of washers accounted for 37.5% of the total for the first 10 months of this year, while the October shipments of household washers, 115,019, is within less than 1% of the October, 1937 total, 116,001.

Industry Leader Passes



JOHN H. KNAPP

John Knapp, Norge Vice President, Dies

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past 10 years, within which time Norge home appliances have become widely known throughout the world. Mr. Knapp played a key part in the growth and development of the Norge organization.

He first served the company as purchasing agent, until 1931, when he was placed in charge of the sale of Norge refrigerators and made vice president and general sales manager of the company.

His dynamic personality, his extraordinary energy, and his ability to dramatize products and sales plans to dealer and salesman audiences quickly won him fame throughout the industry. The rapidity with which he set up a strong, nationwide distributing organization for Norge refrigerators will long be remembered.

Mr. Knapp was graduated from Flint Central High School in 1911. He started his business life with the Durant Dort Carriage Co. of Flint, and later went with the Chevrolet Motor Co. of Flint.

In 1919 he was transferred to the Canadian Products division of General Motors of Canada, Walkerville, as director of purchases, where he remained until 1923 when, under the direction of Howard E. Blood, he came to Detroit Gear & Machine Co. as purchasing agent.

Victim Learns Where To Purge Refrigerant

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purging the refrigerant gas into a closed room.

Over the course of several days' work a severe case of methyl chloride poisoning gradually built up in his body, discovered only when he collapsed in the lobby of the Adams hotel in Tulsa, Okla.

When Mr. Bowen insisted on being taken to Henry Ford hospital in Detroit a friend offered to drive him to Detroit. (Doctors said later this trip was a good thing, as the fresh air he absorbed on the trip helped to "purge" the gas from his system.)

Mr. Bowen described his reactions as that of a very "punch-drunk" individual, but nearly three weeks of complete rest in the hospital and some treatments which consisted mainly of being put in an oxygen tent have cleared up his system, and being fully recuperated, he is starting right back on the job.

Detroit A.S.R.E. To Hear Talk on Boulder Dam

DETROIT—An illustrated talk on Boulder Dam by Dr. R. A. Kirkpatrick, director of the lecture bureau of the Union Pacific Railroad, will feature the December meeting of the Detroit section of American Society of Refrigerating Engineers in the Lee Plaza hotel on Wednesday, Dec. 7.

As president of the National Americanism Congress, Dr. Kirkpatrick has been an active promoter of recreational areas, forest conservation, wildlife protection, and kindred interests. He has traveled extensively in the United States and Alaska.

National Institute For Training Salesmen Introduced As 350 Kelvinator Men View 1939 Models

(Concluded from Page 1, Column 3)
periodically clog U. S. trade and throw so many people out of work."

The Kelvinator National Salesmen's Institute will be radically different from any sales training program used by the company in the past, Henry W. Burritt, vice president in charge of sales, said in outlining plans for the institute to the distributors assembled in Detroit's Masonic Temple.

It will be broader in many respects, Mr. Burritt said, and major effort will be directed toward the teaching of the fundamentals of selling, so that salesmen will not only be better salesmen of Kelvinator products, but better able to sell any product.

DRIVE IMPROVED BUSINESS

"The recent National Salesmen's Crusade, the 'Sales Mean Jobs' movement originated by Mr. Mason and sponsored by Kelvinator, showed what inspired salesmen could do to improve business and help recreate employment," he declared.

"Communities reported business increases of 10, 20, and 30%," he continued, "but I wonder how many more increases there might have been, and how much larger they might have grown, if salesmen had been better founded in the fundamentals of selling."

"I believe that business has been more or less guilty of neglecting its salesmen from a training point of view since away back in 1929. That's the year of the 'big blow,' so to

speak, and the year when business scurried for storm cellars.

"Probably when we emerged from the storm cellars, we forgot to take with us one or two important fundamentals. Certainly we have shown but little progress in the education of our selling people, and they are the most important part of any business."

Heading the National Salesmen's Institute as president is Sidney Edlund of New York City, author of books on selling and business success, teacher, administrator, salesman, and former head of several companies that are known nationally.

Making a hobby of helping salesmen and sales executives, he has gained a wide reputation through his "Man Marketing Clinic," an organization he has carried on at his own expense to help salesmen and sales executives better sell their services and find jobs.

Mr. Edlund, who was introduced at the convention, said that the institute will consist of a director, a number of regional representatives, and a congress of leading salesmen. Members of the congress will be chosen annually from among Kelvinator's outstanding salesmen, and will be paid for their services.

"Our training courses," he explained, "will be prepared jointly by executives of the institute and salesmen in the field, for the ideas of all selling men in the organization will be solicited. It will be a modern program, based on conditions as they

exist today, and the program will be changed as conditions change.

"In a way, the institute will be a cooperative organization. Salesmen will help salesmen by contributing ideas and experiences. We will expect our leading salesmen to play a big part in the institute, as we will draw upon their years of experience on the firing line for material for our training courses. Only ideas which have been tested and proved successful will be included."

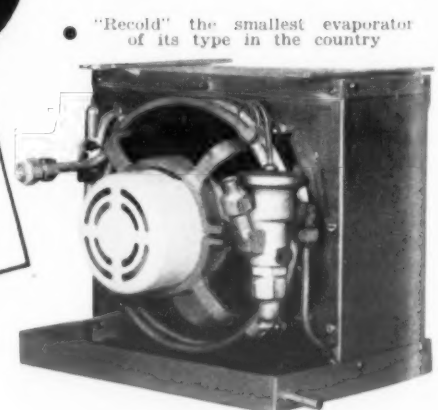
LAUNCH PLAN IMMEDIATELY

Headquarters of the institute will be maintained at the Kelvinator offices in Detroit, it was announced. The activity will be launched immediately. Announcement will be made next week of the director, who will head up the Detroit institute office as director under Mr. Edlund, as will announcement of the regional men.

Mr. Burritt was chairman of the convention, and speakers included Mr. Mason, R. C. Cameron, household appliance sales manager; Harry Parsons, sales manager of the electric range and water heater section; R. W. Poirson, in charge of electric washers and ironers; J. A. Harlan, sales manager of the commercial refrigeration division; H. D. Wehrly, assistant to the vice president in charge of sales; W. A. Blees, general sales manager of the Nash Motors division; J. Nelson Stuart, director of advertising and sales promotion of the Kelvinator division; W. E. Saylor, sales promotion manager; E. B. Barnes, advertising department; G. V. Egan, assistant secretary and assistant treasurer of Nash-Kelvinator Corp.; and H. W. Newell, vice president of Geyer, Cornell & Newell, Inc., Nash-Kelvinator's advertising agency.

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It has been our experience that on convection type evaporators as small as the one mentioned, it is more difficult to use the entire surface and at the same time eliminate frost backs on the suction line than on the same type evaporators of larger capacities. We are, therefore, indeed happy to tell you that to date your valves have proven 100% satisfactory.
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Air Conditioning & Refrigeration News

The Newspaper of the Industry

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THE COLD CANVASS

By B. T. Umer

Postoffice Problems

If letters addressed to us contain the words "Refrigeration News" or "Business News" apparently the post-office knows exactly what to do, regardless of incorrect or incomplete address. Even a letter addressed to 5229 Cass Ave., New York City arrived the other day marked "Try Detroit."

There seems to be a tendency, however, for stenographers to write "Business Men's Pub. Co." instead of "Business News," and that isn't so good because there is a Business Men's Print Shop in Detroit. There is also a Business Men's Assurance Co.

Other chances for our mail to go wrong include Business Publishers International Corp., the Business Week Magazine, Business Supplies Printing Co., and the Detroit News.

Seven Detroits

Until we read an article in a Detroit paper the other day, we had the idea that there was only one Detroit in the world. According to the article, there are seven postoffices in this country named Detroit and another which used to be Detroit but is now Detroit Lakes.

Detroit, Texas, got into the news recently by staging a rally to promote Vice President John N. Garner for the Democratic presidential nomination in 1940. There are also

New Beverage Cooler Looks Like a Bottle

BUFFALO—A novel bottled beverage cooler that actually looks like a huge, overgrown bottle is being manufactured by Jewett Refrigerator Co. under the name "Beerador."

Built in the shape of a "steinie" beer bottle, this refrigerated storage and display case stands 8 feet 5 inches high and measures 37 inches in diameter. By taking off a section of the neck, the height of the unit may be reduced 7 inches. Capacity of the cooler is 21 cases or 504 bottles.

The cooler is equipped with a large glass door. Each of its seven circular shelves revolves on five roller bearings.

Refrigeration is supplied by a twin-cylinder compressor powered by a 1/4-hp. motor. This assembly is mounted just beneath the spun aluminum top, which can be removed for service purposes. Air is taken in through the gold cap of the bottle and passes out through a rear vent. A non-frost blower coil is said by the manufacturer to maintain a uniform temperature within 1° F. throughout

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'Christmas Buffet' Is New Promotion Plan

DETROIT—Home economics department of Kelvinator has developed a "Christmas Buffet" plan, designed to be used by distributors in various parts of the country to supplement their Christmas program this year.

Purpose of the promotion is to acquire the names of present Kelvinator users, the names of new prospects, increase floor traffic, and build up goodwill for the dealerships in the distributor's territory.

The buffets can be held any time between Dec. 1 and Dec. 24. Guests, invited through either hand-written or typewritten invitations sent out on regular government post cards,

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Conservador To Be Made & Sold By Philco Firm

Philadelphia Battery Co. Buys Refrigerator Rights From Fairbanks-Morse

INDIANAPOLIS — Philadelphia Storage Battery Co., parent company of Philco Radio & Television Corp., last week entered the household electric refrigerator field by purchasing the Conservador refrigerator division of Fairbanks, Morse & Co. here.

Announcement that the Conservador division will become a unit of Philadelphia Storage Battery Co. on Jan. 2 was made by officials of the two companies.

The company has acquired a lease of the present manufacturing facilities in Indianapolis, and the Fairbanks-Morse refrigerator plant, moved here from Chicago in January, 1936, will continue to be operated, at least for the present, it was said.

W. Paul Jones, formerly general manager of the Fairbanks-Morse

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Wage & Hour Law Rule Affects Distributors

WASHINGTON, D. C.—Wholesale distributors who purchase their goods from outside the state are subject to the Fair Labor Standards Act, whether or not all of their sales are made within the state, according to an opinion recently issued by the wage and hour division of the Department of Labor.

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A.S.R.E. President



GARDNER POOLE

Executive vice president of Frosted Foods Sales Corp. (distributor of Birdseye Frosted Foods), Boston, Mass., and vice president of General Foods, Inc., who succeeded Col. Crosby Field as president of the American Society of Refrigerating Engineers, at the annual meeting of the society held in New York City last week.

Dr. Poole will represent the professional engineers on the program of the All-Industry Refrigeration & Air Conditioning Banquet which will be held at the Stevens hotel, Chicago, on Monday evening, Jan. 16, 1939. The Chicago, St. Louis, Detroit, and Milwaukee Sections of the Society will hold a reception for President Poole just before the banquet.

Other speakers at the banquet will be Henry W. Burritt, vice president in charge of sales, Kelvinator Corp., and L. R. Boulware, vice president and general manager, Carrier Corp.

New Food Preservation Technique Emphasized In Engineers' Talks

Schellenberg Cites Need For Statistics On Parts & Supplies

By A. B. Schellenberg
Alco Valve Co.*

THE refrigeration parts and accessory industry is of sufficient importance to warrant serious consideration in any discussion of the industry's market research problems.

It is estimated that roughly 70 million dollars worth of parts and accessories are sold annually to air-conditioning and refrigeration manufacturers. Parts jobbers over the country sell another 10 million dollars worth of accessories in a year. The manufacture and sale of controls, evaporators, fittings, valves, tubing, belts, seals, etc. has a very definite bearing on the growth and development of this industry.

The need for adequate statistics and market data is just as great in the parts and accessory business as it is in the parent industry. Unfortunately, however, reliable statistics in the parts industry are few and far between. From this standpoint the refrigerating machinery and air-conditioning manufacturers are far ahead of us.

Two distinct types of information are sorely needed in the parts and accessory business; first, actual sales statistics showing dollar volume of products sold; second, reliable indications of new product requirements.

Sales statistics are, of course, of

(Concluded on Page 16, Column 2)

*Talk given at Conference on Market Research held during the annual meeting last week of the A.S.R.E.

'Standards' Also In the Spotlight; 'Model' Code Is Near Adoption

NEW YORK CITY—The ever-widening scope of refrigeration in food processing and food preservation was again the dominant theme at an A.S.R.E. meeting as the industry's engineers met last Tuesday through Friday in the Commodore hotel here for their thirty-fourth annual meeting.

Perhaps from a news standpoint the most important event at the convention was announcements of progress made on several projects by the standards committee, most exciting of which was that an early count of the mail ballots showed that the revised draft of the American Safety Code for Refrigerating Systems has been approved by the American Standards Association Sectional Committee B9, of which five members are representatives of the A.S.R.E. and the others from various other associations and societies in the industry.

This means that only the formal approval of the American Standards Association is needed to make available the long-awaited "model" safety code, which it is hoped will be adopted in substance if not in entirety by all municipalities which desire a refrigeration safety code.

Taking up where they left off at the Food Conference in Knoxville, Tenn. in October which the society sponsored, the engineers discussed

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Gale Products Plans & Officials Announced

GALESBURG, Ill.—Gale Products has been formed as a new division of Outboard, Marine & Mfg. Co. to take over all air-conditioning and refrigeration activities formerly handled by the Johnson Motors division of the company.

A new brick-and-steel factory of 50,000 sq. ft. has just been completed alongside the first unit of the plant constructed here about a year ago. Active production will be started soon after the first of next year.

C. P. Rossberg, for 15 years in an executive position with the Johnson Motors division, and secretary and treasurer as well as a director of the company, has been made manager in full charge of operations.

Sales of Gale products will be under the direction of L. H. D. Baker, general sales manager, formerly vice president of Copeland Refrigeration Corp. and later with Universal Cooler Corp. in charge of commercial unit and private brand sales.

Mr. Baker will be assisted by C. A. Thomson as assistant sales manager. Mr. Thomson has been connected with the company in its refrigeration activities for more than five years.

J. E. Armes, who formerly handled sales of air-conditioning equipment,

(Concluded on Page 6, Column 4)

Loss of \$119,753 For Year Reported By York

YORK, Pa.—Preliminary report of York Ice Machinery Corp. for the 12 months ended Sept. 30, 1938, shows a net loss of \$119,753 after depreciation, interest, and all taxes. This compares with a net profit of \$957,586 for the 12 months ended Sept. 30, 1937, and a profit of \$165,586 for the year ended Sept. 30, 1936.

Current assets as of Sept. 30 amounted to \$8,646,341, and current

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Officers of the Refrigerating Engineers Society For 1939



George Hulse, chief engineer, Safety Car Heating & Lighting Co., vice president of A.S.R.E.



Chester Lichtenberg, engineer, General Electric Co., Fort Wayne, Ind., vice president of A.S.R.E.



Dr. William R. Hainsworth, vice president, Servel, Inc., Evansville, Ind., vice president of A.S.R.E.

Veteran Dealer Finds Salary Paid In Lean Months Holds Good Salesmen & Reduces Sales Expense

FORT WORTH, Tex.—Instead of discharging salesmen during the "lean" months when the normal demand for mechanical refrigeration is at its lowest, W. L. Renshaw, sales manager for W. (Pat) Crow, refrigerator dealer, pays them a small salary sufficient for necessities plus a small commission on sales.

The firm does not follow this policy through any feeling of generosity, Mr. Renshaw points out, but rather because it boosts profits. Salesman turnover, he says, is the greatest item of selling cost, aside from actual commissions paid.

During the dull months, salesmen

frequently leave or are discharged, Mr. Renshaw explains, therefore in order to cut down turnover and preserve profits the men are paid a small salary for these months as an inducement to remain with the firm. That the system is satisfactory, so far as cutting down salesman turnover is concerned, is indicated by the fact that four of the nine salesmen for this company have been on the job between six and seven years. The newest man has been with the firm for more than a year—yet all of them are basically commission salesmen.

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Attack on 'Holiday Discounts' Resumed

MILWAUKEE — Continuing its holiday campaign against industrial "discount buying" for the third successive year, Wisconsin Radio, Refrigeration & Appliance Association has sent a series of three letters to executives of 300 of the largest companies in the Milwaukee area, urging their cooperation in stamping out the practice.

This year's letters use the "labor angle," since labor organizations in this territory have been especially active recently in decrying group buying by employees of large industrial companies.

"This is a problem that needs more

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Specialty Selling Methods

Hudson's Home Economists Aid Many Sales By Program Designed To Arouse Interest

By Jane Laing

DETROIT—Stimulating sales of electrical appliances by means of free services and demonstration activities which bring increased traffic to the appliance department is cited as the major function of the Home Advisory Bureau of the J. L. Hudson Co. here by Jessica Meek, director.

Mrs. Meek points out that although the trained home economists on the bureau staff are not engaged in direct selling, they pave the way for a large percentage of sales by telling the story of electrical appliances and stimulating interest in them, thus making the job of selling easier.

The cooking schools, outstanding feature of the department, bring thousands of homemakers, who are interested in the most modern methods and equipment, to the department. Four cooking schools are held each week, and frequently, after the demonstration of a minor appliance or a household utensil, the department will completely sell out on the item, Mrs. Meek declares.

COOKING SCHOOLS SELL

"Of course, this does not happen with refrigerators or ranges," Mrs. Meek says, "however, as many as four refrigerators have been sold immediately after a refrigeration class."

The cooking schools also provide a place for a buyer to introduce new merchandise or to push slow-moving merchandise, Mrs. Meek explains, saying that after a four-day demonstration of electric roasters, so many were sold that the buyer had to re-order immediately.

Mrs. Meek attributes much of the success of her department in sales promotional work to the cooperation which she receives from the buyers, and to the fact that the cooking demonstrations are planned to tie in with sales that are being conducted on the floor. Early in the spring, when refrigerators are being pushed, guest lecturers will conduct classes in refrigeration; and late in the fall, when the holiday season draws close, attractive displays will suggest appliances as gifts, and the classes will feature special holiday recipes.

Another service which is sponsored by the bureau, and which brings traffic to the department, is the distribution of a daily recipe. A new recipe, tested by the home economists, is distributed each day. Five hundred copies are printed daily, and

the customer must go to the department to receive one. They are not mailed.

The three model kitchens and breakfast nook, at least one of which is redecorated every three months, attracted more than 24,000 visitors during January, 1938, Mrs. Meek states. A member of the Home Advisory Bureau staff serves as hostess in these rooms, and gives advice on kitchen equipment, gifts, remodeling, and redecorating, and also directs customers to the departments where the articles displayed in the rooms are sold.

In discussing the kitchen planning activities of the bureau, Mrs. Meek points out that assistance in planning a new kitchen or remodeling an old one is given without charge to anyone wishing it. This service is extremely popular with customers, she says, as they can completely equip the kitchen at the store which carries a complete line of leading makes of ranges, refrigerators, and other equipment.

"After the customer has accepted our plan and placed the order for the equipment, we install all the material we sell, and in the case of remodeling a kitchen we do all the work and plumbing necessary to modernize it," she explains. "We act as supervising architect and agent for the customer, and carry the account on a single contract for the complete kitchen."

WORK WITH SALESMEN

Although the staff members do no direct selling, they frequently work with the salesmen in closing sales. They give individual instruction to customers who are planning to purchase electrical equipment or have already purchased it. This service is important, Mrs. Meek feels, as customers who know how to obtain the best results from their appliances and how to use them most efficiently are better satisfied. Homemakers are encouraged to bring their problems to the bureau, where trained staff members assist in solving them.

To show how floor traffic is affected by the bureau, Mrs. Meek quotes the following figures from her monthly reports:

In January, 1935, the staff gave range and refrigeration instruction, advice on equipment, and assistance in meal planning to 525 customers; in January, 1938, the bureau assisted 1,889 customers with the same problems. Two thousand pieces of litera-

ture were distributed at the bureau in January, 1935, compared with 28,000 pieces in January, 1938. During the same month this year, the cooking schools attracted 6,155 women.

Tangible Profits From Home Service Dept. Shown In Study

VANCOUVER, B. C., Canada—Curious as to whether or not its home service department actually was paying its own way, B. C. Electric Railway Co., Ltd., made a thorough analysis of this phase of its organization and arrived at the conclusion that the company received tangible benefits from the program far in excess of the cost.

Records showed that the home service department in one year created a total of \$19,650 in immediate business—\$9,735 in merchandise sales and \$9,915 in annual revenue through power consumption. In piling up this record, workers in this division made a total of 17,000 customer contacts.

Based on 1,353 demonstrations conducted, the revenue earned by the department—per demonstration—was as follows: immediate load added, 333 watts; prospective load, 106 watts; immediate annual revenue, \$7.33; merchandise sales, \$7.04.

A breakdown of the 17,000 customer contacts made by home service workers showed the following results: 7,942 bulletins issued, 7,073 persons attended teas and group demonstrations, 6,103 telephone inquiries answered, 1,922 persons interviewed in office, 1,500 appliance prospects submitted, 998 refrigerator demonstrations conducted, 587 electric range demonstrations conducted, 441 gas range demonstrations conducted, 662 telephone contacts on range operation, 32 telephone contacts on refrigerator operation, 230 electric range complaints, 120 kitchens planned.

Experience of this utility has indicated that mature women make the best home service representatives, as the personnel turnover among this class of employee is much slower than among young women employees, and the work and comments of the older women seem to have more effect upon the customer.

Branch Head Sells Even From Hospital Bed

MONTEZUMA, Ga.—Working on the theory that you can sell anybody you can see, M. G. Bell, local manager of the Georgia Power Co. branch, stalked his visitors while he was in the hospital recuperating from a fractured backbone so well that he sold a water heater to one prospect and a range, refrigerator, and water heater to another.

The water heater sale was made to a local banker, and Mr. Bell helped Mrs. Mary Ham, local cashier, with the range, refrigerator, and water heater order.

Not loafing while her boss was away, Mrs. Ham also sold a water heater to a customer, and a range and refrigerator to another.

Good Store Arrangement Improves Sales, Govt. Report Points Out

WASHINGTON, D. C.—"Store Arrangement Principles," first of a series of reports designed to be of assistance to the small business man in the retail field, has just been released by the Department of Commerce.

The study is intended to provide information by which the development of new or old stores may be directed in conformance with local requirements of people and goods, and should be of especial value to owners of medium and small-sized stores.

While there may be more important problems facing retailers today than the problem of store layout, the study points out, marketing surveys show that many of the retailers' problems can be solved in part by improving this feature of his business.

PRACTICALLY NO LIMIT

There is practically no limit to the number of things that can be done in store layout, and the merchant who wants to experiment can find an almost unlimited opportunity. But best business, the study says, is to include only those features that have been found to be successful in selling particular kinds of goods.

The report outlines the conditions governing the basic use of space in retail stores, shows that the essential problems and solutions generally are similar in most kinds of business, and attributes similarity to the likeness of available properties.

Evidence of the dollar advantages of improved store layout is shown in a statistical tabulation included in the study, which records partial results of a movement a few years ago, in which the Department of Commerce cooperated with merchants in various cities in a plan to improve the physical appearance and efficiency of retail food stores.

SALES INCREASE

A study conducted in Jacksonville, Fla., one year after a model store had been set up there showed that, of the 59 stores which had been remodeled along the lines of the original model store, 49 reported increased sales, ranging from 5 to 65%.

Included in the study is a list of the characteristics found in well-designed small and medium-sized stores. A retail store arrangement, the study reveals, develops naturally along the lines in which the merchant has particular skill, talent, or leaning. Thus, some drug stores emphasize the prescription department, some grocery stores have larger meat business, and customer contact features are stressed in still others.

SHOULD EXAMINE STORE

Merchants who have been in business for some years should re-examine their store and merchandise, to determine the effectiveness with which they are serving customers today, the study declares, in saying that, if stores are not adapted to meet changes within the community, new types of distributors may supplant the non-adapting merchandiser who no longer possesses the sort of store in which persons take pleasure in trading, and from which they can be served economically.

Copies of the study, No. 104 in the Domestic Commerce Series, are available at 10 cents each from the Superintendent of Documents, Government Printing Office, here, or from district branches of the Bureau of Foreign & Domestic Commerce, located in several principal cities.

Dealer Devises Revolving Christmas Display That Exhibits All Appliances

OAKLAND, Calif.—Putting appliances in holiday dress and displaying them on an 8-foot window platform that took a minute and 22 seconds to revolve proved a Christmas appliance sales-maker for Hauschildt Music Co. here.

Christmas shoppers, stopping to watch the platform revolve, saw at close range a display of 35 large and small appliances suitable for holiday gifts.

Central piece in the display was an electric refrigerator, wrapped and tied with transparent holiday wrappings on which was printed a Christmas carol design in red and green. Tie and large bow were of green transparent material. One half the platform was devoted to built-up display shelves, on which small appliances were shown.

Special treatment was given a combination electric mixer and fruit juice extractor, which was encased in a golden transparent wrapping and tied with green and red bows to develop it to the proportions of a large gift package, suggestive of the popular fruit and confection gift baskets.

Several of the smaller units, such as irons and toasters, also were gift wrapped to suggest the possibility of their use as Christmas presents as well as the more expensive appliances.

Most of these smaller units, including table model radios, were displayed without Christmas wrappings, but at least one from each group was packaged so as to tie it in with the holiday gift season. Practical utility of the appliances, shown without wrappings beside their twin in Christmas garb, made the display doubly effective, the store found.

Intensive Promotion In New Orleans Results In 'Contraseasonal' Gains

NEW ORLEANS — Surprising "contraseasonal" gains in sales of electrical appliances in the New Orleans area during the early part of the fall were reported by three leading retail stores here following an extensive sales survey.

Two of three retailers are department stores which carried on the most ambitious fall campaigns on electric refrigerators in the history of their respective organizations. These stores reported an increase in turnover from 25 to 30% above the preceding two months. The third firm, strictly an appliance outlet, reported an increase of 60% for the same period.

John H. Eberhardt, manager of electric refrigeration sales for Maison Blanche, one of the reporting department stores, declared that his store's August sales were the biggest of the year, rising 25% above the year's next best month and 30% above sales for August, 1937. September and October sales, he reported, were slightly down from the August peak, but still were above sales for the same months last year.

"These figures are surprising," Mr. Eberhardt pointed out, "in view of the fact that our firm has usually experienced its greatest refrigerator demand at the beginning of the summer. The contraseasonal gains experienced this fall can be attributed to four factors: a steadily improving economic outlook for the nation, increased local prosperity, a reduction in service rates made effective in August by New Orleans Public Service, Inc., and consistent, intelligent advertising by local appliance dealers."

AT LAST . . .

THE WHOLE TRUTH ABOUT SULFUR DIOXIDE

Every service engineer in the refrigeration field should read "Sulfur Dioxide as a Refrigerant," an authoritative paper by Augustus H. Eustis, member of the American Society of Refrigerating Engineers and President of the Virginia Smelting Company. Sulfur Dioxide is described from every angle both theoretical and practical, and popular fallacies are fearlessly discussed. Containing practical tables and service data, this paper constitutes a reference text of great value to those who realize the necessity of being thoroughly posted on the characteristics and problems of this leading refrigerant gas.

We will be glad to send you a free copy.

VIRGINIA SMELTING CO.
131 STATE STREET, BOSTON, MASS.

REPELS MOISTURE

PALCO INSULATION WOOL

Fibres will not support capillarity. Sheds free moisture. Dries out unimpaired when soaked. Odor and vermin-proof. PERMANENT . . . NON-SETTLING . . . ECONOMIC. Write for 16-page Insulation Manual and free sample.

THE PACIFIC LUMBER COMPANY
San Francisco Chicago
Los Angeles New York

DURABLE AS THE REDWOODS

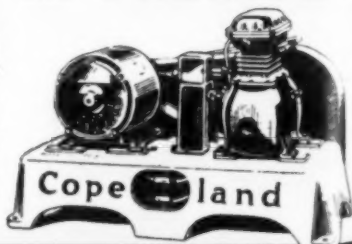
Build Both PROFITS and PRESTIGE

with **Copeland**

Commercial Refrigeration

There's a double satisfaction in selling Copeland Commercial Refrigeration. First, of course, is the extra PROFIT offered by this quality-line. And second, there's the satisfaction of knowing that every Copeland you sell adds to your reputation and prestige.

Write today for FULL FACTS about Copeland's profit opportunity.



COPELAND REFRIGERATION CORPORATION, Sidney, Ohio

CROSLEY DEALERS ARE ALREADY AWAY TO A SUCCESSFUL 1939

**IMPROVED HERMETIC SEALED UNIT
SHELVADOR CONVENIENCE HALF FOOT OVERSIZE
NEW ECONOMY**



*DELIVERED AND INSTALLED...5 YEAR PROTECTION PLAN \$5.00 ADDITIONAL...PRICES SLIGHTLY HIGHER IN SOUTH AND WEST

REFRIGERATION'S NO. 1 SALES APPEAL • THE CONVENIENT SHELVADOR PLUS

CROSLEY LOW PRICES

GIVE DEALERS A RUNNING START IN GETTING PROSPECTS • CLOSING SALES



-and Now...

3 DELUXE MODELS

1.5 cubic feet 5.5 cubic feet
6.5 cubic feet

with all features of the Regular Line, plus deluxe features as:

- Quick release ice trays
- Sliding and adjustable shelves
- Ovenproof pottery set
- Glass left-over jars
- Vegetable bins
- De Luxe trimmings

Crosley's DeLuxe line for '39 is announced, stocked, displayed; already earning profits for dealers.

Crosley is in step with the new march of business, with handsome new refrigerators, advanced in design, and in construction, satisfying every human expectancy in performance, and priced for sales ACTION, which progressive dealers are getting.

You can be sure with Crosley! Sure you are selling the best value on the market, sure you have the easiest refrigerator to sell and sure you'll get your share of 1939 business and maybe more.

THE CROSLEY CORPORATION
POWEL CROSLEY, Jr., Pres.
CINCINNATI, OHIO

THE SMARTLY CONCEIVED AND SMARTLY PRICED "DELUXE LINE" OF NEW 1939

CROSLEY SHELVADORS

ATTRACT CUSTOMERS NOW • ARE HIGHLY SALABLE • AND MOST PROFITABLE

Commercial Refrigeration

80% of 'Sterilamp' Installations Successful, A.S.R.E. Told In Talk on Latest Findings

NEW YORK CITY—New developments in the use of ultra-violet light in food storage (more specifically, the "Sterilamp") both from the standpoint of laboratory tests and observations of actual installations in the field, were outlined by Prof. Arthur W. Ewell of Worcester Polytechnic Institute, Worcester, Mass., in a paper prepared for presentation at the annual meeting last week here of the American Society of Refrigerating Engineers.

"At several recent meetings of the A.S.R.E., you have enjoyed the privilege of hearing Dr. Rentschler, the ultimate authority upon ultra-violet light and its applications," Dr. Ewell began.

"Today, as a Boswell, I will tell you something of what has developed under the guidance of Dr. Rentschler during the past six months.

QUANTITATIVE KNOWLEDGE

"The additional knowledge obtained during this period in the research laboratories devoted to the study of the Sterilamp has been largely quantitative in contrast to the largely qualitative data previously presented. Dr. Rentschler has proved that a given quantity of radiation produces the same amount of killing of bacteria or mold irrespective of the time of application, except when the time exposure is very long.

"For example, if a given intensity of the ultra-violet light from a Sterilamp kills 50% of bacteria *Coli* on a seeded culture plate in one-half an hour, 50% killing will be obtained in one minute with 30 times that intensity.

"Dr. Rentschler has tested this so-called 'Reciprocity Law' down to a time of one hundred thousandths of a second, the corresponding intensity for 50% killing being 180 million times the intensity necessary for 30 minutes' exposure.

OZONE FACTOR

"It was found some time ago that the killing of micro-organisms located in the shade—that is outside of the direct radiation—was produced by bringing to these bacteria by a gentle circulation the air which had been subjected to radiation from a Sterilamp. It was also demonstrated that oxygen was the constituent of the air which acquired germicidal properties. It has long been known that ultra-violet light changes ordinary two atom oxygen into three atom oxygen, or ozone.

"A concentration of ozone of no greater than one thousandth of a part per million in air radiated by the Sterilamp inhibits bacterial and mold growth on surfaces reached by a very moderate air motion. Infection will develop in crevices, etc., when the air is stagnant.

STERILIZATION OF AIR

"Dr. Rentschler has already reported upon the remarkable sterilization of the air by this radiation. A given quantity of radiation produces about 10 times greater killing of airborne infection than of similar micro-organisms on a surface. In order to produce an equivalent killing of air-borne micro-organisms with ozone added to ordinary air, concentrations of ozone of the order of one part in a thousand are required.

"It is well known that high ozone concentrations produce on meat surfaces discoloration and often an objectionable odor, and fat portions are turned rancid. No such ill effects have ever been observed on meat surfaces in the shade subjected to the highest ozone concentrations produced by Sterilamps.

"The radiation from a Sterilamp produces a very slight coagulation of meat surfaces, too slight to affect appreciably either the appearance or superficial taste after cooking. It is, however, sufficient to reduce evaporation or shrinkage materially, the reduction amounting to several percent.

"This is in addition to the great reduction in loss from evaporation made possible by the maintenance of humidities of about 90%. Such

humidities, without the Sterilamp, involve, after a few days, serious surface infection by bacteria or mold or both and consequent loss from trimming.

CHANGE IN 'BLOOM'

"In addition to the deterioration of the flavor and odor of meat surfaces by bacteria and mold and the commercial loss by shrinkage there is the continuous change of the natural color or 'bloom.' This ultimately affects the saleability so much that often trimming is necessary on this account before it is required by the bacterial slime or heavy mold.

"Loss of color is due to two causes—first, oxidation of the coloring matter, haemoglobin, in the meat surface to the methaemoglobin, and second, to breakdown of the haemoglobin by bacteria.

"Oxidation of the haemoglobin is reduced by lowering the temperature and by raising the humidity in the surrounding air. With a relative humidity of 90%, and a superficial bacterial infection of 60,000 bacteria per square inch (a very moderate infection), serious color impairment appears after nine days at 32°, six days at 35°, four and a half days at 40°, three days at 45°, and two and seven-tenths days at 50°.

INCREASES STORAGE

"If the initial infection is low and further infection inhibited, the loss of color is materially retarded and the number of days before the surface appearance is so much deteriorated as to require trimming is substantially increased from the number of days just specified.

"With too intense radiation from the Sterilamp, meat surfaces are impaired, acquiring a burnt appearance and odor. When lamps are properly installed with, if necessary, screens (see below), no meat is near enough to the lamps to suffer burning, and loss of color is materially retarded by the great reduction in superficial bacterial infection. Such an improvement in color has been observed and reported very generally when Sterilamps have been installed.

"At the present time in two of the research laboratories working with the Sterilamp, a chart of standard colors is used and the colors of radiated meat and of similar meat in a control box without radiation are observed from day to day. The results to date show convincingly the better color under radiation. More experiments are necessary, however, before one can state the exact gain in days of carry at different temperatures and humidities.

THE PRACTICAL SIDE

"Let us now leave the laboratory and examine the results achieved in commercial storage in walk-in boxes and display cabinets. A sufficient number of installations have been in operation for six months or more to give a clear picture of the practical side.

"We will confine our attention to boxes with which the writer has had some contact or definite information. They vary from a capacity of 250 cu. ft. with a single lamp to 50,000 cu. ft. and 15 lamps.

"A survey last summer of 43 installations in Boston and vicinity found 80% giving satisfactory results including all but one of 26 large boxes, the stored goods being kept with such a reduction in bacterial slime, mold, and shrinkage and such an improvement in appearance that the operators considered the lamp a wise investment.

"The success of the remaining 20% was doubtful. In no case was it difficult to ascertain the cause—usually improper refrigeration, humidity, air motion, or general house-keeping. In a few instances the radiation was either too small or too great and in one or two cases the temperature of the lamps was too low for efficient operation, due either to the box being maintained below 35° or due to the lamps being cooled by a strong air current.

"Practically all of these unsatis-

Luttrell Heads Central Division of Midwest



W. O. LUTTRELL

GALESBURG, Ill.—W. O. Luttrell has been appointed central district manager of the commercial division of Midwest Mfg. Co., to supervise sales activities in 14 central and southern states on the Midwest line of commercial refrigerator cabinets and display cases, reports J. C. Battles, manager of refrigeration sales.

Mr. Luttrell has had extensive experience in both household and commercial refrigeration fields. For the past five years, he has operated his own distributing organization, handling store fixtures, refrigeration, and air-conditioning equipment.

For 10 years prior to that, he was associated with Frigidaire and General Electric, and for three years was commercial sales manager for a large midwestern utility company.

Mr. Luttrell's headquarters will be at the Midwest general offices here.

factory installations were corrected after this survey and are now operating to the owners' satisfaction.

"Sterilamps will not remove mold or slime present when meat is introduced into a meat box, although they will retard further growth or spread of initial infection.

"They cannot successfully compete with the infection resulting from the continuous introduction of bad meat, filthy housekeeping, and irregular or inadequate refrigeration.

"There must be sufficient air motion to bring the ozone in the radiated air in contact with meat in the shade. In all large boxes and often in small boxes the air circulation must be supplemented by fans.

"If some meat must be so near a lamp as to endanger burning, the radiation must be reduced by a wire screen in front of the lamp. The alternative of cutting down the current is objectionable because the ozone would also be reduced and, as stated above, no difficulties from excessive ozone have ever been observed.

"Injury to the color of meat by excessive direct radiation has already been mentioned. Injury to other goods is remarkably rare. Butter and cream may acquire an 'off' taste and the former slight bleaching if too near the lamps.

"The color of some fruits—e.g., bananas—and vegetables, e.g., celery, is injured by intense radiation. If such susceptible goods are kept in the portion of the box far from the lamps there will be no injury. The ill effects of the radiation are unimportant compared with those experienced with other germicidal agents.

"Sterilamps greatly reduce the airborne infection as demonstrated by exposing seeded culture plates at various locations in meat boxes. One of the most striking contributions of the Sterilamp is sweetening up of cold storage enclosures, objectionable odors being completely removed."

"Superior by name Superior in Quality"

SUPERIOR VALVE & FITTINGS CO.

500-5713 ST. PITTSBURGH, PENNA.

Manufacturing a complete line of DIAPHRAGM PACKLESS VALVES, MANIFOLDS, ACCESSORIES and FITTINGS for the Refrigeration and Air Conditioning Industry.

Modern Equipment Cuts Refrigeration Costs on U. S. 'Snag' Boat

BIRMINGHAM, Ala.—Reported reduction in operating cost from \$20 a day to 40 cents a day has been effected by an ice-and-refrigeration installation in a U. S. War Department snag boat operating on the Black Warrior River, several miles east of here.

The boat is engaged in clearing the river channel of stumps and other obstructions, and has to take food and water supplies for a two-weeks trip.

An old ammonia system operated by steam had been providing refrigeration for a 1,000-lb. ice maker and cooler. With this unit, it was necessary to maintain a head of steam at all times, and the daily cost, above regular operating expense of the boat, was about \$20.

J. C. Clayton, sales engineer for the Alabama Appliance Co., Westinghouse distributor in Birmingham, installed a new refrigerating system consisting of an 8 x 10 cooler with brine evaporator, a 10-gallon water storage tank, a 75-lb. Victor ice maker, and a Fedders dry-expansion ice maker in the galley.

Equipment is operated by a 1½-hp. Westinghouse reciprocal-type condensing unit, powered by a 3-hp. Briggs-Stratton engine. Operating time is now only six to eight hours a day, at a cost of only 40 cents a day, states Capt. Gould, master of the snag boat. The brine tank holds the refrigeration overnight.

The old equipment weighed 10 tons, and the new installation weighs only two and a half tons. This lighter load has resulted in the boat's riding three inches higher.

Alabama Appliance Co. also has modernized the refrigerating systems in 15 CCC camps in this district by replacing old ammonia systems, which were costing each camp about \$80 a month, with porcelain reach-in refrigerator cabinets operated by Westinghouse compressors, which have cut operating costs to a fraction of the former amount.

Dowling Manages York Sales Engineering

YORK, Pa.—Roger H. Dowling has been appointed manager of the newly created sales engineering division of York Ice Machinery Corp., according to an announcement by S. E. Lauer, vice president.

Mr. Dowling entered the York organization as a student sales engineer in 1928, and previous to this appointment had served in many capacities, particularly in connection with the engineering and sale of dry ice manufacturing plants. He has been on various sub-committees of Air Conditioning Manufacturers Association, and was instrumental in formulating certain equipment standards for Refrigerating Machinery Association.

Century Moves Robinson To General Office

ST. LOUIS—E. C. Robinson, former district sales manager of the Detroit office of Century Electric Co., has been transferred to the company's general office here.

J. S. Jervis moves up in the Detroit office to succeed Mr. Robinson.

Anaconda Copper Refrigeration Tubes

Unusually long lengths!

THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Office, Waterbury, Conn.

Beer Refrigerator



'Beerador' is the name given to this unusual refrigerator, designed for the display and storage of bottled beer and other beverages.

Jewett Introduces New 'Beerador' Cooler

(Concluded from Page 1, Column 1) the box. Insulation consists of three 1-inch thicknesses of cork.

Exterior of the unit is of auto body steel finished in brown Dulux highlighted to make the cooler's resemblance to a bottle more pronounced. Interior is of Armco iron, finished in aluminum.

Strips of green Neon tubing may be recessed into the refrigerator along the top and sides of the door, if desired.

Chief among points stressed by Jewett company in regard to its new product is the value of the cooler as an "attention-getter" and a "sales-stimulator." Novel design of the unit catches the eye of every person entering the store in which it is located, company officials claim, and often results in customers purchasing more beer than they ordinarily would.

Use of this unit is particularly advocated in stores desiring to encourage self-service, or where display space is limited. Because of its size and shape the cooler occupies a minimum of floor space, and may be used in almost any location. Its large door and revolving shelves make self-service simple.

When loading the cooler, warm beer is put in at the front. Then the shelf is given a quarter turn, and cold beer is in front ready to be removed. There is no need for the merchant to take out cold beer to place warm beer at the back of the box.

The PREFERRED Refrigerant for service work



MACHINE MAKERS like ARTIC because its favorable combination of properties permits building compact, light-weight units that operate efficiently and economically.

Service Men like ARTIC because its high purity, wide distribution and ease of handling contribute to convenient, dependable work in recharging Methyl units.



E. I. du Pont de Nemours & Co., Inc.
THE R. & H. CHEMICALS DEPT.,
Wilmington, Del.

Commercial Refrigeration

City Dealer Turns To Farms & Finds Milk Coolers Sell In Winter

BALTIMORE—From December to February, L. K. Blucher, Baltimore appliance dealer, stops worrying about a 60% refrigerator saturation and gets around the country selling milk coolers.

This mid-winter concentration with which Mr. Blucher does very well is not motivated entirely by the fact that there is an interlude in the sales of the heavier appliances in the city at this time of year. He has found, after three years of sales work on the farms, that the farmer is a surer prospect for milk coolers from December to February than at any other season.

"I make my campaign on milk coolers in the mid-winter months because it is a slack season with the farmer," says Mr. Blucher. "He isn't in the field at this time, but is 'fixing up' around his barns and stock pens. His attention is on improvements and greater profits.

"Just as I don't approach him at the busy season, so I also select the best time of the day for my call. I don't attempt to sell a butcher a meat case on Saturday afternoon when his store is full of customers. Neither do I talk milk coolers to the farmer when he is sitting on a plow or milking his cow.

"I see the butcher at his home in the evening, when he isn't thinking about the next customer; and I talk to the farmer inside the house when he isn't estimating how many furrows it will take him to finish the field.

"It is easier to sell the farmer a milk cooler than a refrigerator, because there is farm profit in a cooler, and this comes first. There have been many instances where I have sold a milk cooler when the home did not have a refrigerator.

A SELL-YOURSELF JOB

"My first step is to sell myself to the farmer. I have to do this before I can get a hearing. The farmer doesn't buy in a hurry. He takes time to think the deal over from every angle. By the time I have made the sale we know each other quite well. The first point to put over, of course, is that by cooling the milk properly a better butterfat content is obtained, which brings a better price.

"Before he buys a cooler, my customer wants to know if any of his neighbors have one. He takes a half day off, goes over and checks up. I try to quote a neighbor-user in terms of profit as, for instance, 'So-and-so, over on the Jones place says you couldn't buy his cooler for three times what he paid for it.'

"The plan, then, is to work from one neighborhood to the next, so that the prospect can always be referred to a nearby user.

CALLS AT NOON

"I usually select the middle of the day for my call. In the morning or late afternoon, the farmer is apt to be busy with his chores, but at noon he relaxes. I may help him shell a bushel or two of corn before we go up to the house.

"When the farmer says, 'Well, I suppose I am going to have you on my hands for some time now,' you know he has decided to buy a cooler, but also that he is going to take a while to think it over.

"We are getting more sales with the dry-storage type of cooler, since we can now recommend it for baby chick feeds, which increases our prospect field.

PROSPECT SOURCES

Our plan for building a list of prospects is to contact a packing or provision company, dairy, or other marketing agency for farm products. Individual sources with these firms, who know and talk with numbers of farmers, can furnish good leads. We are fortunate in having a close tieup with a meat packing concern which is in daily contact with farmers.

Other sources are the dairy farms, the larger farms, and institutional farms."

Mr. Blucher has demonstrated that an appliance dealer located in a

large city can get out and sell the farmer just as well as the merchandiser in the rural community. He selected two farming areas adjacent to his section of Baltimore. Two valleys lead out from this district, and, because they can be covered most conveniently, he started his campaign in this territory, gradually expanding to more distant farming areas.

"Our greatest sales resistance is in the service cost of farm appliances," says Mr. Blucher. "When private utility companies see their way to reducing electric rates to the farmer, farm appliance merchandising will be a profitable field for the dealer. The REA co-operatives have shown the way in this to lower service costs and immediately ascending appliance sales."

One Display Case Sale Leads To 3 More To Competitors

GORHAM, Me. — When A. F. Briggs, representative of Sherer-Gillett Co. in the Portland, Me. territory, sold a refrigerated display case for installation in a new market in this town of 2,000 people, he started a sales trend that brought him three additional sales within a period of 19 days.

Curious as to the wherefore of four sales made so quickly in a community which ordinarily would not support more than that number of markets, K. D. Zenkere, Sherer-Gillett sales manager, queried Mr. Briggs and learned that:

The first case was sold to a merchant who was opening a new market. Three days later, a second merchant purchased a new case, so that he might be on terms of equal competition with the first one.

Then, the next week, the third Sherer case in the town was sold to a grocer, who decided that if he wanted to keep his grocery business he'd better handle meat as well. News of the three installations reached the ears of a merchant just outside the town, and he bought the fourth case to keep step with his city competitors.

Handling Mills condensing units in addition to Sherer cases, Mr. Briggs was able to make the four complete installations through his own organization.

Many Uses Seen For Small 'Pakicer'

MILWAUKEE — A new ½-ton "Pakicer," a self-contained ice making machine complete with compressor, ice maker, and storage bin, has been introduced by Vilter Mfg. Co.

When connected for water and electric power, the Pakicer is ready to operate, and begins to make ice within 20 minutes, Vilter engineers claim.

Compact in design and construction, the Pakicer occupies a floor space of 3 by 5 feet, and has an overall height of 6½ feet.

The unit produces ice in the form of fine crystals, soft, easy to handle, slow-melting, and with no sharp, hard, or bulky chunks, it is said.

"Pakice" is used for icing milk crates in dairies, for packing fish for shipment, for protecting fruits and vegetables in shipment, for mixing with meat in a chopper for sausage making, and for display counter refrigeration.

One of the new applications of the ice is as a sparger in whisky mash, to provide more uniform cooling of the solution.

Compressor unit of the Pakicer is mounted on an extension at one side of the wooden freezer cabinet.

Vilter also has announced a 1 and a 2½-ton Pakicer, thus offering production capacities of from ½ to 30 tons of ice a day.

Wasson To Supervise York Sales of Evaporators

YORK, Pa.—Lloyd D. Wasson has been appointed national supervisor of evaporator sales in the commercial division of York Ice Machinery Corp., announces S. E. Lauer, vice president and general sales manager.

Before joining the York organization, Mr. Wasson was general sales manager of Refrigeration Appliances, Inc., Chicago. Previously he had been a regional manager for Williams

Oil-O-Matic Heating Corp., and manager of the refrigeration department of International General Electric Co. at San Juan, Puerto Rico.

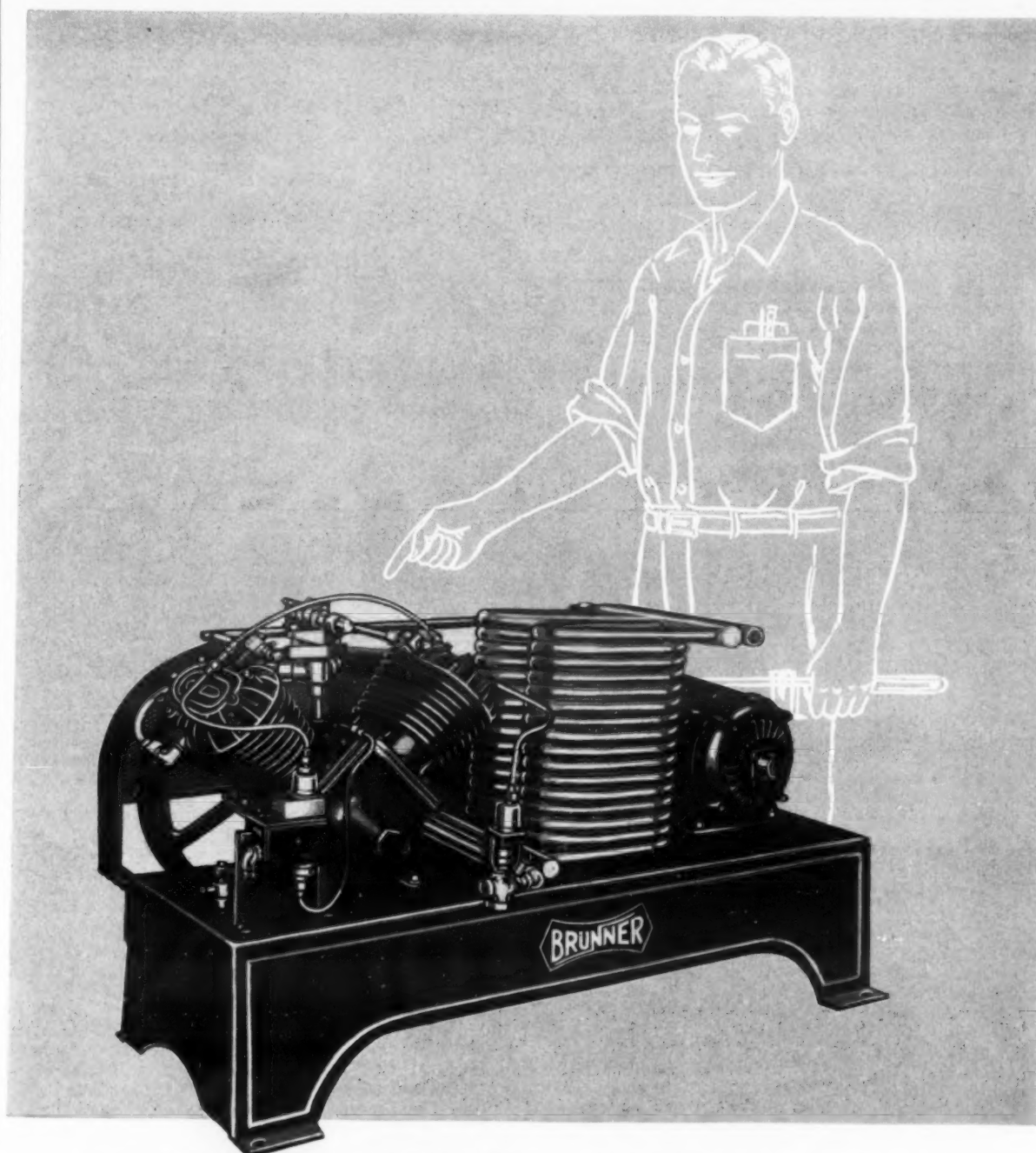
New Plant Is Planned For Ohio City

TIPPECANOE CITY, Ohio—A refrigeration and cold storage locker plant will be constructed here by the Farmers' Locker Storage & Provision Co., Inc. Organizers of the firm are E. H. Timmer, Robert A. Prince, and Arthur R. Owen.

Butcher Adds Locker Plant, Storage To Market

MABEL, Minn. — Harold Lind, operator of a retail meat market here, is constructing a refrigerated storage and locker plant to be conducted in connection with his market.

The plant will have a chilling room, a processing room, freezing room, and locker room equipped with 100 lockers to rent for \$10 a year. There will be space for 150 additional lockers.



CONTROL VALVES CONVENIENTLY "BUNCHED" FOR QUICK, EASY ADJUSTMENT

No neck-cranning necessary when you adjust the control valves on a Brunner! There they are "out in the open" where they can be readily seen and worked on... Another convenience on the new Brunner Condensing Units is the motor take-up arrangement, making this occasional adjustment very simple—a matter of seconds... From every angle—convenience, dependability and economy—Brunner refrigerating equipment is a wise choice for exacting commercial applications. With a wide range of units, air and water cooled, designed for any of the commonly used refrigerants, there's a Brunner Condensing Unit for practically every installation up to 15 tons of refrigeration. Get the detailed Brunner story... see what Brunner engineering and advanced manufacturing and testing methods have done to put mechanical refrigeration on an eminently dependable basis. Write: Brunner Manufacturing Company, Utica, N.Y., U. S. A.

IT'S **BRUNNER**
FOR *economical* SERVICE

Major Appliances

Philco To Introduce 'Conservador' Models Middle of January

(Concluded from Page 1, Column 2) home appliance division, is said to be scheduled to remain with the new organization in a similar capacity.

Manufacturing operations will be controlled by Philadelphia Storage Battery Co., with distribution to be handled by the Philco nation-wide distributing organization.

Merchandising activity will be definitely increased by the transfer, Mr. Jones stated, and it also is likely that manufacturing operations will be increased in scope, because of Philco's wide distribution facilities.

Purchase of the Fairbanks-Morse division marks Philadelphia Storage Battery Co.'s second step into the field of refrigeration. Early last spring, Philco organization took on national distribution of a self-contained room cooler manufactured by York Ice Machinery Corp.

Announcement of new refrigerator models is tentatively scheduled for about the middle of January, and advertising plans are now being formulated. Manufacture of the new line is expected to be started about the first of the year.

"Philco's program for entrance into the refrigerator field will be to first build a solid foundation," said Larry E. Gubb, Philco president. "We believe that there is a definite place for us in the industry with a quality refrigerator product, backed by the sound merchandising for which Philco is and has been well known for many years."

N. Y. Refrigerator Drive Plans Undecided

NEW YORK CITY—Final details of the proposed mechanical refrigerator sales drive planned by Consolidated Edison Co. of New York for next spring were still undecided after a meeting last week of members of the merchandise planning committee of Electric & Gas Association of New York with E. F. Jeffe, vice president of the utility.

The meeting, a closed affair, was attended by representatives of the utility company, approved dealers, distributors, and manufacturers. At a second meeting of manufacturer and distributor representatives the following day, further discussion of the campaign was held.

Consensus of distributors at the meeting, it was said, was that it was impractical to arrive at a definite decision regarding the campaign, in view of the fact that their new lines and sales plans were undetermined.

Difficulty also was experienced in agreeing upon a set retail price for a promotional refrigerator, it was reported, with rather wide variance of conferees upon this subject.

Wisconsin Group Again Hits 'Discount' Sales

(Concluded from Page 1, Column 4) than policing . . . it needs enlightenment," the first letter states.

"We understand the reason for 'courtesy discounts' to your people . . . but that very generous action on your part gives the small retailer a serious case of 'heartache,' for he sees his business and his profits vanish.

"The savings to your employees may be small . . . the losses to the retailer may be collectively enormous."

The second letter, carrying out the theme, states:

"Today, December is just another month to many merchants, thanks (?) to the 'courtesy discounts' offered by well-meaning industrial and commercial institutions.

"We appreciate your good intentions . . . but won't you consider for a moment what that means to men who have put years of effort into a business that is seasonal . . . men who depend upon your employees for their livelihood."

Cooperation of the companies in discontinuing this practice would be a great help in helping to maintain the "balance of business," the letter concludes.

"While we in the appliance business appreciate labor's interest, we feel that an appeal to the fundamental reasoning power of industry itself will go a long way in helping to lessen this evil," the third letter states.

"Industry in its legitimate and meritorious effort to help its employees seldom considers the ultimate result, that of lessening the revenue of authorized small and large retail dealers everywhere.

"Big business needs little business. And whatever big business does to stifle little business reacts to the detriment of big business.

"Won't you kindly consider the plight of the small dealer, who in order to stay in business must make the legitimate profit on his sales to your employees . . . so that he may in turn contribute to the general prosperity of the nation?"

Other retail organizations in Wisconsin are becoming interested in the movement to abolish discount buying, reports H. L. Ashworth, secretary-manager of the association, and a movement is underway to bring about a cooperative effort of this kind by a number of leading trade organizations next year.

Houma, La. Dealer Occupies New Quarters

HOUMA, La.—Home Appliance Co., Electrolux dealer, has opened offices and display rooms in the Grasso building on Main St. under the management of Howard LeBoeuf. Other members of the firm include Lee Domangue, Edward Lemangue, and Miss Marie Bergeron.

Canadian Kelvinator Men View '39 Lines At 2-Day Meeting

LONDON, Ont., Canada—Kelvinator's plans and products for 1939 were shown and explained to sales, branch, and district managers from all parts of the Dominion, service department heads, plant superintendents, and financial executives at a two-day conference conducted by Kelvinator of Canada, Ltd., in the Hotel London, Dec. 6 and 7.

Morning and afternoon conferences were conducted under the chairmanship of J. S. Blay, general sales manager.

Opening the convention, C. W. Hadden, general manager of Kelvinator of Canada, Ltd., outlined the condition of the company, and touched upon general topics to be developed in later general discussions.

Mr. Blay then addressed the convention upon the subject of plans and quota for household electric refrigerators. He was followed by the chief engineer, A. V. Phillips, who reported on the performance of the company's 1939 model refrigerators, and gave a complete description of the 1939 models, which are to include a new and improved sealed unit.

T. H. Yull, director of McConnell, Eastman & Co., Ltd., advertising agency, then spoke on "Selling Plans and Dealer Cooperation."

First day's afternoon session resumed with a talk by Mrs. H. A. Bradley, in charge of the credit department, on "The Relationship Between Credit and Sales." Mr. Blay then took up the complete story of commercial sales in 1938, and covered the development of new commercial refrigeration units for 1939. Mr. Phillips then dealt with the company's facilities and program on air-conditioning units for the coming year.

He was followed by Crawford Keith, comptroller, who outlined the price structure for 1939 and spoke on tariffs, taxes, and other matters governing costs. General discussion followed.

Second day of the conference opened with an address by O. S. McGuffey, chief engineer of Kold-Hold Mfg. Co., Lansing, Mich., who outlined the value and merits of his company's equipment. Following his address, L. S. Rolland, Canadian manager of Pacific Lumber Co. of Illinois, Chicago, told the conference about Palco Wool insulation, which is used in some Kelvinator equipment, and is made from the bark of California red wood trees.

J. A. Cowan then spoke on Kelvinator ice cream cabinets, touching on the product, new features, sales quotas, and other matters.

Resuming in the afternoon, Mr. Cowan covered washing machine sales, giving a review of the 1939 models, together with suggestions as to plans and methods of increasing sales.

Mr. Blay next discussed Kelvinator stokers. Following him, Charlie Cunningham, of the service department, spoke on the importance of appliance service. General discussion followed on the types of meetings to be held in the various cities during the coming year.

One of the most interesting periods of the conference was a series of five-minute talks by each district manager. Each man outlined his individual problems, and set forth ideas for securing new dealers, promoting sales, and improving methods and policies.

At the banquet that night which closed the conference, Mr. Hadden urged conventionites to surpass during 1939 the fine work which he said they had accomplished this year. Several members of the Kelvinator Canadian organization took part in the entertainment program which featured the evening.

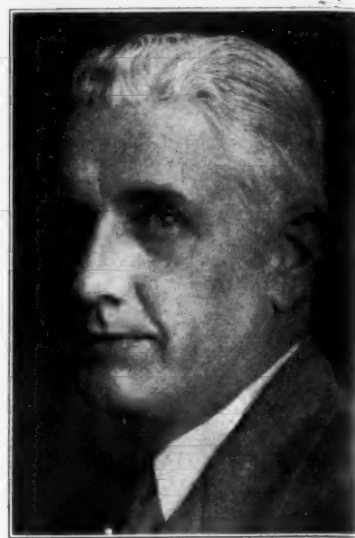
Refrigerator Taxes Total \$335,154 In October

WASHINGTON, D. C.—Excise tax collections on mechanical refrigerators during October of this year amounted to \$335,154.16, compared with \$597,903.74 during the same month of 1937, a decline of 49.3%, according to figures announced by the Commissioner of Internal Revenue.

Direct Activities of Gale Products Co.



C. P. Rossberg, general manager, is also secretary and treasurer of Outboard, Marine & Mfg. Co.



L. H. D. Baker is general sales manager of refrigeration and air-conditioning products.

New Gale Products Division Formed By Outboard Mfg. Co.

(Concluded from Page 1, Column 5) is now in charge of advertising and sales promotion on all the line. Previously he was with Edison General Electric Co. and in other appliance work.

The company first entered refrigeration some five years ago, manufacturing its product in the Johnson Motors plant at Waukegan, Ill. With the growth of household refrigeration sales and the successful introduction of a space cooler for individual room air conditioning last year, however, volume has reached proportions sufficient to demand not only increased and centralized factory facilities, but also a separate administrative, sales, engineering, and production personnel of its own, it was announced.

While refrigerators heretofore have been sold under the name "Briggs" (after Stephen F. Briggs, chairman of the board), the new line soon to be announced will bear the name "Gale." It is said that lines of both deluxe and standard or popular-priced models will be produced under the new name.

Attention also is being given to the development of commercial units in several sizes, it was announced, and the air-conditioning developments of the past year will be expanded into wider usefulness.

Administrative and executive personnel of the new division is composed mainly of men long connected with other divisions of the company.

Engineering department is headed by J. F. Furry, active for the past five years on the company's refrigeration products. Mr. Furry has been in refrigeration engineering work for 12 years. Commercial unit engineering is under the supervision of George Lindgren, formerly with Copeland and Universal Cooler.

Manufacturing is under direction of "Bill" Walters, who has been handling production of the company's units for several years. Other trained men "transplanted" to Galesburg are Chuck Geske, service manager, Harold Bourdon, accountant, and Don Tharp, assembly foreman.

Cooke Motor Co. Named Dealer For Frigidaire

LAKE CITY, S. C.—Cooke Motor Co., managed by Gene Saunders and having headquarters here, has been appointed Frigidaire dealer in the Lake City and Kingstree territory, and is maintaining displays in both.

Range Survey Plan Used In Cleveland

CLEVELAND—Feature of a range promotion program recently launched by the Electrical League of Cleveland was a "Survey and Prospect-Finding Plan" designed to enable dealers to concentrate their sales efforts in the most fertile markets.

Survey of 16,000 homes by trained men was undertaken to explain electric cooking and electric water heating to the housewife in person, and to survey each home as a guide to future direct-mail and other sales operations.

In addition, cooking schools, sponsored by member dealers, were held in the league auditorium, and in community centers. Kitchen parties in range owners' homes also were arranged.

Cooperative advertising and consumer literature featuring ranges was provided by the league, as well as by member manufacturers and distributors. League demonstrators were available for store demonstrations, especially near locations where field survey men were working.

To create greater interest among dealers and range salesmen, a prize award contest was introduced. Electrical merchandise was awarded for points gained by sale of appliances.

West Penn October Drive Nets 226 Range Sales

PITTSBURGH—Final results of the October "Discovery Month" promotion on electric ranges and water heaters sponsored in this territory by West Penn Power Co. show a total of 226 range sales and 25 water heater sales. Twenty of the water heaters and 177 of the ranges sold were installed during the month.

1,102 Appliances Sold During San Antonio Home Show

SAN ANTONIO, Tex.—A total of 1,102 appliances representing a dollar volume of approximately \$92,000 were sold by the 14 dealers who displayed equipment at the National Home Show sponsored here recently by San Antonio Public Service Co.

Forty-five firms supplying equipment for the home had exhibits at the show, which drew an attendance of more than 45,000 people to the Municipal Auditorium.

Appliances sold during the exhibition included 243 refrigerators, 157 washers, 171 radios, 157 ranges, and 160 heaters and furnaces. In addition, hundreds of good prospects were obtained, exhibitors reported.

150 pounds
OR 3

Ansul provides the most usable cylinder size for your needs

• Like shirts and nails, Ansul refrigerant cylinders are sized to fit your particular needs. Six different-sized cylinders for Ansul SO₂ . . . seven for Ansul CH₂Cl. You can appreciate the convenience and economy.

ANSUL CHEMICAL COMPANY • MARINETTE, WIS.

ANSUL SULPHUR DIOXIDE
ANSUL METHYL CHLORIDE

THERE IS AN ANSUL JOBBER NEAR YOU

KRAMER

HEAT INTERCHANGERS

For Increased Effectiveness—Smoother Operation of Thermostatic Expansion Valve, and Increased Compressor Capacity

KRAMER TRENTON AUTO RADIATOR WORKS TRENTON, N. J.

Air Conditioning

Engineers Hear Dr. Young on How To Fit Air Conditioning To Hospital's Needs

NEW YORK CITY—Once the medical profession becomes fully aware of its value, hospital air conditioning will become as universal as central heating plants, Dr. Albert G. Young, medical director of Corey Hill Hospital, Brookline, Mass. told members of American Society of Refrigerating Engineers at their meeting here last week.

Reviewing the little-understood question of proper conditions of air for hospitals, Dr. Young recommended optimum conditions of 55% relative humidity and 76 to 80° F., with from 10 to 15 air changes per hour, for operating rooms, and maximum conditions in summer of 35% relative humidity and 80° temperature, with winter conditions of 25% relative humidity and 76° temperature, for recovery rooms.

These conditions, he explained, have been followed with success at Corey Hill Hospital, which is completely air conditioned. In the first year the system was in use in the hospital, of 743 operations there was but one case of post-operative pneumonia.

CONDITIONING GETS CREDIT

"The only explanation I can offer for such a remarkable showing is the constant temperature and humidity within the optimum range," Dr. Young declared. "Temperature and humidity within this range are also beneficial to the patients' general recovery, since they do not suffer the devitalizing effects of heat waves and high humidity."

He recommended air conditioning as being more important in recovery rooms than in the operating room, since the average patient is in the operating room less than two hours, and the greatest danger of post-operative pneumonia and allied complications comes within the first 72 hours after operation. Also, research has shown that there is a great increase in post-operative deaths during a heat wave.

In addition to reducing the incidence of post-operative pneumonia and surgical deaths, air conditioning reduces infant mortality, overcomes immediate attacks of hay fever and asthma in extreme cases, and is of definite therapeutic and diagnostic value, Dr. Young continued. It also provides the best conditions for treatment of rheumatic diseases.

FOR PREMATURE INFANTS

In the case of premature infants, air conditioning performs a vital service in effecting stabilization of body temperature, because their heat regulatory mechanism is not fully developed. Air temperature requirements in cases of this kind may vary between 75 and 100° F., with optimum relative humidity at 65% and between 15 and 25 air changes per hour.

Dr. Young cited figures showing that in the Infants Hospital in Boston, the unconditioned nurseries for the years 1923-25 showed a mortality of 28.9%, while the conditioned nurseries in the period 1926-29 showed a drop in mortality to 14.5%, where relative humidity was 25-49%, and 0.7% where relative humidity was 50-75%.

"The normal or full-term infant benefits by an increased temperature and humidity for the first 48 hours after birth," he went on. "After that time he will thrive on the same conditions as outlined for the surgical recovery rooms."

FOR ALL BABIES

"Therefore we can recommend that the full-term infants be placed in the premature nursery for the first 36-48 hours, and then transferred to the nursery for normal infants, where a temperature of about 75° F. and a relative humidity of 30 to 49% is adequate."

Patients who are sensitive to inhaled substances, and this includes the great majority of allergic cases, are greatly benefited by air conditioning, Dr. Young said.

"In this condition," he continued, "filtration is the most important factor, and this can be very well handled by a combined air washer and filter system. Greatest danger of failure is contamination of the rooms with pollen from within the hospital itself, or through leaks in the window sills and doors or down-drafts through a fireplace or other duct."

He recommended use of an easily isolated section of the hospital for this purpose, the use of double doors, double-sash windows, and making all exhaust ducts "one-way" ducts.

IN HAY FEVER CASES

Temperature and humidity are least important here, he stated, but constancy of both is of value, since allergic patients usually cannot adjust themselves to sudden changes of temperature and humidity.

In such environment, the hay fever patient will obtain relief within the first two hours, with the asthma and skin sensitivity patient requiring from eight hours to several days to show improvement.

"If the patient does not improve under these conditions," Dr. Young said, "the physician can be certain that his allergy is 'intrinsic' (due to food, focal infection, etc.) rather than 'extrinsic' (due to inhalants or contact). This is one of the diagnostic values of air conditioning."

"It is also of value in diagnosing 'extrinsic' cases. The patient who is in an acute attack of hay fever or asthma gives a positive skin test for almost any allergen, so that an accurate test cannot be made until the acute attack has subsided."

"Under an air-conditioned environment, the attack will subside and the skin tests may then be carried out. It also permits the physician to carry out 'rush' treatments, in which the patient can be given six months' treatment in six to 12 days."

TREATING RHEUMATIC FEVER

In the treatment of rheumatic fever, use of air conditioning as a supplement to present treatment would cut down the mortality rate greatly, lessen susceptibility to recurrent attacks, and prevent many cases from advancing to the point where the heart is severely impaired, Dr. Young declared.

The arthritic patient has always benefited by a warm dry climate, he continued, and while air conditioning alone will not affect a cure, it will add to the patient's comfort and speed recovery. In the more severe cases, it may even be the deciding factor in recovery.

Air-conditioned hospitals also provide a refuge from extreme climatic changes for victims of heart failure, high blood pressure, kidney disease, etc., Dr. Young pointed out. Patients suffering from such ailments often cannot meet the added load placed on the heart and circulation by extreme heat or cold, and here air conditioning proves of real value.

He recommended that there be no general recirculation of air throughout a hospital. This means an increase in the cost of maintenance, he admitted, but should be followed because of odors, possible spread of infection, and the psychological hazard involved.

Chicago Sales In Nov. Total 8 Systems

CHICAGO—Five central-plant air-conditioning systems, representing an aggregate capacity of 49 hp., were sold in the Chicago territory during November, according to statistics compiled by Commonwealth Edison Co., public utility.

This compares with five systems with a combined capacity of 72 hp. sold in the corresponding month of last year.

November air-conditioning contracts were for installations in a photographic studio, general office, food store, printing plant, and residence.

In addition to the central-plant systems, three room coolers also were sold during the month.

Air-Conditioned Flat Planned In Chicago

CHICAGO—Plans for a completely air-conditioned apartment building to be erected soon in this city at a total cost of \$11,000 were announced recently by the First State Mortgage Co.

The building, which will be erected in the Budlong Woods section at Foster and California Aves., will be equipped with incased radiation and automatic thermostatic control. It will have many modern features including padded floors, Celotex insulated walls and ceiling, asphalt floored bath in a variety of colors, tile walls in kitchen and bath, breakfast nook, and built-in bungalow kitchens.

The building was designed by Le Vee & Le Vee, architects, and will be constructed by E. E. Hattam, Inc., general contractor. A scale model is now on display at 4752 W. Fullerton.

Orders In October Gain Over Sept. But Fall Short of 1937

WASHINGTON, D. C.—Orders for air-conditioning systems and equipment booked by 125 U. S. manufacturers during October amounted to \$3,436,197, an increase of 12.6% as compared with \$3,052,460 for September, according to figures compiled by William L. Austin, director of the Bureau of the Census, Department of Commerce.

Orders booked during October of last year amounted to \$3,891,050.

Total orders in the air-conditioning group in October amounted to \$1,227,572, as compared with \$1,238,302 last October and \$1,267,009 in September, the preceding month. In the self-contained classification, October orders totaled \$156,907, as compared with \$193,557 during the same month a year ago.

Unit systems not self-contained showed orders totaling \$291,100, as compared with \$404,779 in October, 1937.

Month's greatest gains, however, were in the central-station types. Systems of this type for human comfort had orders amounting to \$427,781, as compared with \$310,687 a year ago; and systems of the industrial type had orders of \$106,090, against \$73,986 in October of last year.

Orders for air filter equipment were close upon 1937 figures for the month, with \$35,622 for this October against \$36,815 last year. Humidifier orders rose, amounting to \$81,665 against \$65,005 in the same period a year ago.

In the fan group, October orders were \$983,713 against \$1,269,944 last year; and unit heater orders totaled \$1,224,912, against \$1,382,804.

Orders Booked In October For Conditioning Totaled \$3,436,197, Govt. Reports

Item	Oct., 1938	Oct., 1937	Jan.-Oct., 1938
Total	\$3,436,197	\$3,891,050	\$35,044,076
Air Conditioning Group—Total	1,227,572	1,238,302	17,770,004
Unit Systems—			
Self-contained (shipped substantially complete).....	156,907	193,577	4,993,482
Not self-contained (shipped in sections), including refrigerating or cooling medium.....	291,100	404,779	4,426,423
Central-station Systems, excluding installation if installed (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*			
Human comfort	427,781	310,687	5,085,985
Industrial	106,090	73,986	643,922
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	101,790	112,218	1,190,965
Air washers, including pumps and motors and control where furnished	26,617	41,235	393,179
Air filters, not including sales of filters used with machinery other than fans	36,622	36,815	318,672
Humidifiers	81,665	65,005	717,376
Fan Group—Total	\$ 983,713	\$1,269,944	\$10,780,575
Fans, including bearings, pulleys, or couplings (if furnished)—			
For public and semi-public buildings.....	140,097	110,867	1,522,511
For general industrial uses	187,514	388,582	2,438,203
For mechanical draft	90,486	181,745	909,374
For jobbers stocks and unknown uses.....	135,250	62,344	1,120,467
Small housed and propeller fans—			
Direct connected small housed blowers with motors and control (merchandise motors).....	125,701	169,942	1,288,077
Propeller fans, direct connected and belted (for ventilation only)	220,080	283,850	2,554,678
Driving mechanism for general fan use, not reported above (manufactured or jobbed)—			
Electric motors and controllers.....	83,634	68,776	809,189
Steam engines and turbines.....	951	3,838	138,076
Unit Heater Group—Total	\$1,224,912	\$1,382,804	\$ 6,493,497
Industrial type unit heaters, including heating element and motors where furnished—			
Equipped with blower-type (centrifugal) fans.....	129,515	178,220	737,623
Equipped with propeller-type fans.....	665,852	953,199	2,936,732
Schoolroom type unit heaters, including heating element and motors and control where furnished.....	290,571	87,953	1,476,336
Indirect heating surface, not including unit heater surface (manufactured or jobbed)—			
Steel pipe coil type	1,950	263	14,664
Cast iron type	7,143	7,262	105,358
Copper or aluminum type	129,881	155,907	1,222,784

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc., as are sold with each.

Auto Cooling Inventor Guilty of Stock Fraud

DETROIT—Kenneth E. Whitlock, inventor of an air-conditioning system for use in automobiles, was found guilty of violating the Michigan Blue Sky Law for selling approximately \$4,500 worth of stock subscription certificates in a non-existent company, by Judge Edward J. Jefferies of Recorder's Court here last week.

Gerald K. O'Brien, assistant prosecutor, reported that insofar as he knew approximately 50 persons had invested an average of \$100 each in the concern, which Whitlock called the Refrigerated Air Cooling Co.

The invention, which comprised an adaption of standard air-cooling equipment to an automobile, was described in the Oct. 5 issue.

The News stated in its story that "at the present time the device is not being produced commercially, therefore is not available to the public."

Natkin Adds Ventilating, Heating To Line

TULSA, Okla.—Activities of Natkin & Co., Westinghouse distributor here, have been expanded to include the sale of heating and ventilating equipment, with the new department under the supervision of Alfred Natkin.

The company will handle lines manufactured by Nash Engineering Co., Warren, Webster & Co., and Boyleston Steam Specialties Co. Bert Natkin will remain in charge of air-conditioning sales.



RELIABLE IS THE VETERAN!

Cartridges using Activated Alumina proved effective by actual service!

For capturing trouble-making moisture and getting it out of the refrigeration system, use cartridges of Activated Alumina. They've proved their stuff in everyday use.

Stuff? It's Activated Alumina, which adsorbs moisture. So effectively that you need only insert the fresh cartridge in the unit, circulate the refrigerant, and the moisture is trapped out. Let us send you names of makers of cartridges using Activated Alumina, or if you make your own cartridges, get Activated Alumina from your regular parts jobber.

A SALES POINT NEXT YEAR?

You know how moisture may remain trapped in the intricate passages of the unit, in spite of careful baking and handling. So, why not build mechanisms with a permanently installed cartridge of Activated Alumina, to prevent moisture clogging? ALUMINUM ORE COMPANY, (Sales Agent: ALUMINUM COMPANY OF AMERICA, 1908 Gulf Building, Pittsburgh, Pennsylvania.)



ACTIVATED ALUMINA

PREVENTS CLOGGED REFRIGERATOR VALVES

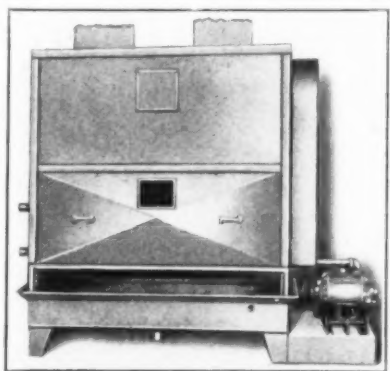
Marlo EVAPORATIVE REFRIGERATION CONDENSERS

Complete self-contained combination forced draft Cooling Tower and Condenser. Outdoor or indoor installation.

Particularly desirable in localities where water rates are high, ordinances restrictive, or drainage systems limited, because—

Marlo Evaporative Condensers save about 95% of water required for ordinary condensers which take water from city mains and waste it. One-ton capacity and up. Write for new Bulletin No. 394 giving full details, specifications and prices.

MARLO COIL CO., 6135 Manchester Ave., St. Louis, Mo.



Manufacturers of Complete Line of Low Side Equipment W-3

Air Conditioning

Operation of Chemical Dehumidifiers In Controlling Relative Humidity Is Described By Coey Before A.S.R.E.

NEW YORK CITY—How air-conditioning systems employing chemical dehumidification operate, and the advantages that are claimed for such systems, were explained by Stewart C. Coey of the Research Corp. before the opening technical sessions of the annual midwinter meeting here last week of the American Society of Refrigerating Engineers.

According to Mr. Coey, air-conditioning installations may be grouped generally into (1) those in which comfort conditions are to be maintained and (2) those used for industrial or technical operations. In both cases for summer operation it is invariably necessary to remove moisture from the air and, in most instances, particularly in comfort cooling, it is necessary to reduce the dry-bulb temperature.

VERY LOW COST

Because of the cost angle, Mr. Coey claims that considerable attention has been focused lately on the use of chemical dehumidification which offers a means of controlling relative humidity at a cost very much less than is possible with refrigeration.

With this method of dehumidification, all of the latent heat, he said, represented by the excess moisture in the air, may be removed by any source of water without requiring the use of refrigeration. At the same time, a portion of the sensible heat can be similarly removed, the quantity so removed being dependent upon the available water temperature.

In the event the temperature of the city water or cooling tower water is not sufficiently low to effect the required sensible cooling, and if a supply of well water is not available for this purpose, then a compressor may be used to secure the sensible cooling. In such event, however, the size of the compressor would be only a fraction of the size necessary to give required results without chemical dehumidification, Mr. Coey declared.

TWO VARIABLES

The moisture content of the air delivered by any brine dehumidifier varies with

1. The temperature of the brine and leaving air

2. The concentration of the brine. Brine changes in its ability to absorb moisture ("vapor pressure equalization point"), with changes in its temperature. This takes place in close relation to changes in partial vapor pressure of air, with a corresponding change in temperature at constant relative humidity.

For practical purposes the vapor pressure equalization point, for any concentration of brine, changes with temperature along the constant relative humidity line.

For any given temperature, the moisture absorbing capacity of any of the brines increases as it becomes more concentrated and decreases as more water is added, in any way, to dilute the solution.

DETERMINING DEWPOINT

As a result of these facts it is possible to determine the dewpoint of the air delivered by any of the chemical dehumidifiers when the factors controlling the dry-bulb temperature of this leaving air are known, and when the brine concentration of the unit is set for any required relative humidity. This is illustrated in Table 1.

The present trend in liquid chemical dehumidification, the speaker explained, is towards the use of various chlorides in water solutions which are held at some predetermined concentration. Chemical dehumidifiers can be divided into three general classes, as follows:

1. The adiabatic dehumidifier
2. The isothermal dehumidifier
3. The Calorider dehumidifier.

In the adiabatic dehumidifier, hygroscopic brine is sprayed into a chamber through which the air being treated is passing and the brine absorbs water vapor from the air stream. There is no change in total heat in an adiabatic unit, so the dry-bulb temperature of the air rises as the dewpoint lowers with the absorption of moisture by the brine.

In this unit there is no change in the wet-bulb temperature of the air as it passes through the dehumidifier and, as a result, it is necessary to use a hygroscopic brine capable of producing a low relative humidity in order to have a unit of this type produce low dewpoints.

Table 1 shows this. For instance, in order to have the dewpoint of the leaving air reduced to 50° F. when the entering air is at maximum New York conditions of 95° dry bulb, 75° wet bulb, 67° dewpoint, it is necessary to have a brine that will produce leaving air of 10% relative humidity.

Liquid chemical dehumidifiers of the adiabatic type produce the same results as are obtained by the use of Silica Gel and Activated Alumina without interstage cooling, for these solid absorbent units are adiabatic.

MODIFIED ADIABATIC

This type of dehumidifier is really a modified adiabatic unit in which the latent heat of the moisture removed from the air is taken up by the brine solution which is cooled sufficiently by external means to produce this result, i.e., keeping the air at constant dry-bulb temperature through the unit.

The air passes through this unit with no change in its dry-bulb temperature and the brine increases in temperature by the amount necessary to compensate for the latent heat released by the absorption of moisture. With this type of dehumidifier it is only necessary to have a brine that will produce leaving air of 20% relative humidity in order to have its dewpoint reduced to 50° F. with entering air at maximum New York conditions.

COOLING EFFECT

The cooling effect of the brine in this type of dehumidifier is governed by the temperature and quantity of cooling water available, and, if this water temperature is low enough, the dry-bulb temperature of the treated air can be lowered in passing through the dehumidifier. Under such conditions, of course, the unit is not strictly isothermal.

This type of dehumidifier should be of the counter current type for maximum efficiency. With this type of unit, the coldest brine contacts the air being treated at the end of the air travel through the dehumidifier.

In the Calorider type of dehumidifier, the hygroscopic brine is sprayed over extended surface cooling coils so that the air and brine is progressively cooled as it passes through the unit. This unit is so designed that air will leave the Calorider within 5° F. of the temperature of the cooling water supply. In a Calorider unit the extended surface of the cooling coil has two functions:

FUNCTIONS OF SURFACE

1. It offers an extended surface over which the brine flows and contacts the air long enough to absorb the moisture.

2. This same extended surface transfers to the cooling water not only the latent heat generated in the brine by the absorption of the moisture, but also the sensible heat from the air with the result that the air is cooled and dehumidified in the one unit.

With this type of dehumidifier it is only necessary to have a brine which will produce leaving air of 40% relative humidity in order to

Table 1—Dewpoint Variation With Dry Bulb of Air Leaving Chemical Dehumidifiers

°F.	Dewpoint temperature of air leaving dehumidifier with concentration of brine, set for relative humidity of							
	15%	20%	25%	30%	35%	40%	45%	50%
50	5.0	11.0	16.0	20.5	24.0	27.0	30.0	32.5
55	8.0	15.5	20.0	25.0	28.5	31.5	34.5	37.0
60	12.0	20.0	24.5	29.0	32.5	36.0	38.5	41.5
65	17.0	23.5	28.5	33.5	37.0	40.5	43.0	46.5
70	20.0	27.5	32.5	37.5	41.5	45.0	48.0	50.5
75	25.0	32.0	37.0	42.0	46.0	50.0	53.0	55.5
80	29.0	36.0	41.5	46.5	50.5	54.0	57.0	60.0
85	33.0	40.0	46.0	51.0	55.0	59.0	61.0	65.0
90	36.0	44.5	50.0	55.5	60.0	63.0	66.5	69.5
100	45.0	53.0	59.5	64.5	68.5	73.0	76.0	79.0
110	53.0	62.0	67.0	73.5	77.0	81.0	84.0	88.0

have its dewpoint of 50° F. under any entering condition and with cooling water available at 70° F.

For any type of liquid chemical dehumidifier it is necessary to have some means of removing from the brine constantly, and at the same rate at which it is absorbed, the moisture being taken out of the treated air, Mr. Coey explained. There are two methods by which this can be accomplished, namely:

1. Boiling the water off as steam
2. Evaporation in air at temperature below the boiling point.

Both of these methods are in commercial use. Each has certain advantages, but the evaporative type of concentrator is in more general use because in this type, the loss of heat in returning concentrated brine to the system can be reduced to a minimum.

In either type of concentrator the amount of brine flowing in the concentrator circuit is only a small part of the total brine flow in the system. This is because of the fact that, in the dehumidifier, enough brine has to be passed through the sprays to completely contact the air and, as a result, the concentration is never reduced more than 1% in the dehumidifier and usually this change in concentration is less than .5%, while in the concentrator the concentration can be increased from 3 to 10%.

Concentration by boiling is feasible only in brines designed to give outlet air relative humidities of from 40 to 60%, as the boiling temperature of any of the chloride brines goes up as its concentration increases, the speaker explained.

BOILING POINT 290° F.

The boiling point of 50% calcium chloride brine is approximately 290° F. at atmospheric pressure and the brine temperature in the dehumidifier circuit is at 90° F. or less. All the brine going to the concentrating boiler has to be heated 200° F. and all the concentrated brine returning to the dehumidifier has to be cooled 200° F.

In order to avoid excessive losses in heat supplied to the concentrator and in cooling capacity in the dehumidifier, a large and efficient type of brine to brine heat exchanger must be used at this point, Mr. Coey explained. This one point is a limiting factor in the application of the boiling method in reconcentration of brine. Of course, the boiling temperature of this brine can be lowered by the use of an evacuated condenser where water is available at proper temperature and low cost.

The air brine concentrator principle is essentially the same as any mechanical draft cooling tower except for one minor difference. In both pieces of equipment water or a water solution falls down through extended surface packing by gravity with a fan blown stream of outdoor air passing upwards through the liquid.

BRINE TEMPERATURE

As is well known, a cooling tower will evaporate water into the air stream when water is pumped to the tower at a temperature higher than the wet-bulb temperature of the outdoor air. Water can be cooled from 95° F. to 85° F. with an outside wet bulb of 75° F.

Brine is different in this one matter of temperature. Some brines have so low a partial vapor pressure at temperatures up to 120° F. that these brines will take moisture out of outdoor air.

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BUNDY TUBING CO., DETROIT

Obviously then, if this concentrator operates as a cooling tower and evaporates moisture to the air, the temperature of the brine must be above the point where it is in equilibrium with the air. For successful operation the temperature of this brine should be heated to at least 200° F. to keep the size of the concentrator unit as small as possible.

For instance, in the case of the calcium chloride brine used in the example on concentration by boiling, the following would be the operating cycle on the concentration circuit.

Brine at 40% concentration would be pumped from the dehumidifier at 80° F., pass through a heat exchanger in counter current flow to the hot concentrated brine returning to the dehumidifier, then through a heating coil where it would be heated to at least 200° F. and then sprayed over the extended surface packing in the concentrator.

The air passing through this concentrator is outside air which has a 67° dewpoint under maximum design conditions. This will be in equilibrium with the brine at 100° F. so that the temperature to which the brine can be cooled is some temperature above this point. In actual practice, the brine can be cooled to 110° F.

In doing this, each 100 lb. of the brine solution evaporates 6 lb. of water, the latent heat of evaporation absorbing the 6,000 B.t.u. that cools this 100 lb. of brine from 200° F. to 110° F. The net result of the cycle as outlined is an increase in concentration from 40% to 42.5%.

ADVANTAGES OF TYPE

The great advantage of this type of concentrator, said Mr. Coey, lies in the fact that the concentrated brine solution, the temperature of which has to be reduced as closely as possible to the average brine temperature of 80° F. in the dehumidifier, is at only 110° F. leaving the concentrator, instead of 290° F. leaving the boiler type of concentrator.

The controls of such a system are:

1. The control of relative humidity of the air leaving the dehumidifier by the control of the concentration of the brine.

2. The control of the dry bulb temperature of the conditioned air by regulating the flow of cooling water either in the dehumidifier or in dry coils after the dehumidifier.

With such a chemical dehumidification system, it is at last practical to control temperatures and humidity entirely independently of each other. In any problem, the fresh air necessary to cover good air-conditioning requirements can be figured, and the dewpoint calculated to which the air will have to be reduced in order to take up the latent heat load of the conditioned space without exceeding the maximum allowable dewpoint for that space. This will determine the size of the dehumidifier and the type of brine necessary to produce the dewpoint required.

SENSIBLE HEAT LOAD

The sensible heat load can then be figured and taken care of in one of three ways:

1. Cooling in the dehumidifier, if sufficiently cold water is available.



MERCHANT & EVANS CO.
Phila., Pa., U.S.A. Plant at Lancaster, Pa.

2. Dry coils in the conditioned space.

3. Dry coils in the conditioned air stream.

The decision as to how to effect this sensible cooling will depend on various factors, such as relation of sensible and latent heat load and the temperature of available water supply.

In some industrial applications, dehumidification is all that is necessary or desired. In cases where the latent load is 30% or more of the total load, then sufficient cooling can usually be effected in the dehumidifier with available water at 70° F. or less.

In cases where the latent load is less than 30% of the total heat load, cooling water at less than 65° F. must be used for the sensible cooling.

In the event such water is not available, a refrigeration compressor is required to remove the sensible heat. The cooled water from such a compressor would be supplied to the dry coils above referred to. This compressor can operate at 56° suction temperature with direct expansion, or 50° suction with chilled water. This is true because the compressor is removing sensible heat only, with no concern as to the dewpoint of the air. This is a 15° to 20° higher evaporator temperature than is the case where the dewpoint of air is reduced to 50° by refrigeration alone.

This increase in suction temperature means a reduction in power consumption to 0.6 or 0.7 hp. per ton, depending on the condensing temperature and the make of the compressor. Therefore, it is possible to not only reduce the tons of refrigeration needed for a given job, but it is also possible to secure more refrigeration from a certain size condensing unit, Mr. Coey claimed.

The cheap chemical drying of the fresh air means that larger proportions of fresh air may be used, and lower humidities carried inside, without incurring prohibitive operating costs, Mr. Coey declared. The latter is of special importance in restaurants and theaters where ventilation, smoke, odors, and high human occupancy are prominent factors, he said.

COSTS DISCUSSED

In the discussion following the paper, C. T. Baker, Atlanta consulting engineer, asked Mr. Coey how an installation using a chemical means of dehumidification would compare in cost with a compression-type refrigeration system doing a comparable job.

In reply Mr. Coey claimed that a study had been made showing that under conditions where steam was available at 50 cents per 1,000 lbs. and electricity at 4 cents per kw., the cost of operating the chemical dehumidifier system was \$242 per season, as compared with a cost of \$756 per season for a compression system.

Lithium chloride is the ideal chemical dehumidifier, said Mr. Coey, at the same time admitting that the cost is high. He also admitted that the "charge" is lost each year from such a system.

Pressed by some questioners, Mr. Coey also admitted that there is a factor of labor and cost in maintenance of such a system, since it must be gone over and cleaned out at least once a year, as it becomes loaded with small dust particles.

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Commercial Service

Service Complaints & Instructions For 'Two Boiler' Fountains (Concluded)

This article concludes the section on servicing of the "two-boiler" soda fountain, which has formed part of the series on the servicing of soda fountains, ice cream cabinets, and counter-type ice cream freezers written by Mr. Black and Mr. Seitz.

Next article will present information on servicing of the "one-boiler" soda fountain.

By Arch Black and Dean C. Seitz

Continuous Running

The fifth general type of complaint on two-boiler fountains is that the refrigerating machine runs continuously.

1. LEAK IN WATER COOLING SYSTEM

A small leak approximately equal to the water cooling capacity of the soda fountain, such as three or four gallons per hour, will cause continuous operation of the refrigerating machine. This leak may be in either the city or soda water cooling coils or cylinders, immersed in the water bath.

A continuous small stream of water leaking into the water bath from the cooling coils will overflow the cool water of the bath into the sewer. Although this condition is not common, it is frequently overlooked by service engineers who handle soda fountain work.

Similarly a leaking draught arm which will continuously drip water represents a large loss of refrigeration, and may be sufficient to produce continuous operation. In any event the leak should be corrected and the customer's attention called to the fact that leaking draught arms are extremely expensive due to the increased operating time of the condensing unit.

2. REFRIGERATING MACHINE TOO SMALL

The soda fountain manufacturers do not recommend or permit knowingly the installation of a refrigerating machine which is too small for the application. However, the majority of the two boiler soda fountains now in use were manufactured six to 15 years ago. The methods of seal-

ing insulation at that time had not progressed to the standards now in use. As a result the operating time of some soda fountains increased over a period of years due to moisture infiltration, plumbing leaks, brine tank leaks, etc.

In cases of this type, the service engineer should make a thorough investigation of the situation, before he makes any definite statement to the customer that the refrigerating machine is too small. Every other possibility of trouble should be investigated.

If the soda fountain is relatively new (if it is less than five years old) a larger condensing unit can be recommended. If the soda fountain is more than five years old, the best interests of the customer will be served by recommending the purchase of a new soda fountain, together with the proper size condensing unit.

3. Shortage of gas
4. Stuck open float valve
5. High head pressure
6. Badly leaking discharge valve
7. Intake valve leak
8. Poor ventilation.

All of the above are typical causes of continuous operation applicable to any type of refrigerating system. The causes are listed to give the service engineer a complete diagnosis of soda fountain troubles although it is assumed that their remedies are already known to him.

Short Cycling

The sixth general complaint is that the refrigerating machine short cycles.

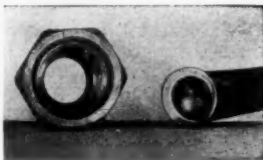
1. CUT-IN POINT OF LOW PRESSURE SWITCH TOO LOW

If the cut-in point of the low pressure switch is low, in combination with a high setting of the pressure regulating valve, the length of the idle cycle will be very short.

Since the pressure throughout the entire system quickly equalizes with the pressure in the sweet water bath boiler as soon as the condensing unit stops, the length of the idle cycle is determined in a large measure by the cut-in point of the low pressure switch.

If the pressure maintained in the sweet water bath boiler by means of

Effect of Frost



How a suction line may collapse and a flare nut will crack when a frostback results in thawing and freezing under the tail of the nut.

the pressure regulating valve is relatively high, producing a small ice formation, the cut-in of the low pressure switch must likewise be high in order to produce a reasonably long cycle.

The remedy is to adjust the amount of ice by means of the pressure regulating valve to the desired amount, and then adjust the cut-in point of the low pressure switch to produce a reasonable length of cycle.

2. RESTRICTION IN LOW PRESSURE SIDE

This point is important in all low-temperature work, but here it applies particularly to the use of frost-proof nuts or other means of accomplishing the same result.

Whenever there is a possibility that a frost back will permit the freezing and thawing of water underneath the tail end of a flare nut, there is an opportunity to collapse the suction line at this point and may even split the nut. The proper remedy is to cut off that part of the tubing which collapsed and reflare, using frost-proof nuts, or to seal, by covering the shank of a regular forged flare nut with an asphalt compound to prevent the possibility of moisture getting between the nut and the tubing.

3. High pressure cut-out
4. Shortage of refrigerant

The last two points above are common causes of short cycling. Their remedies should be familiar to all service men.

Suction Line Frosts Back

The last general complaint is that the suction line frosts back. This condition will often occur on the initial pull-down of a soda fountain if warm brine is placed in the brine tank. The severe and extreme boiling agitation inside the evaporator during the first pull-down of a warm system will frequently bounce a few drops of the liquid refrigerant into the suction tube, producing a temporary frost-back condition.

If, however, the frost-back occurs after the initial pull-down, it is reasonable to assume that more liquid refrigerant is entering the boiler through the float valve than is being removed from it through the suction line.

1. LEAKY FLOAT VALVE

The remedy for a leaky float valve has been discussed in the previous article on soft ice cream. In general the float should first be flushed. If flushing does not correct the difficulty, then it is necessary to change the entire valve assembly.

During any service operation such as changing the float valve, during which sulphur dioxide may be released into the store, it is always advisable to protect the metal top of the soda fountain. The metal top of the fountain is always damp. The release of sulphur dioxide into the store may cause serious and permanent discoloration to the top.

It is recommended that the metal top of the fountain be protected by an oil or grease film before the service man releases any sulphur into the air. When changing a float valve never place the one that has been removed from the boiler on the metal top of the fountain. There is always enough sulphur clinging to the float valve when it is removed to combine with the moisture on the top of the fountain to produce permanent stains.

Veteran Service Engineer Recalls Some Of the Problems of the Early Days

BUFFALO—Personal recollections of a generation in refrigeration service work were recounted by A. Hulbert, local service engineer, in an address presented at the fifth annual convention of Refrigeration Service Engineers Society here.

Mr. Hulbert said that his first real interest in refrigeration came about some 20 years ago when he was in charge of sales and service of ice cream and cooling equipment for one district of a large creamery.

On a particularly hot day, the ice cream was a little too soft for public acceptance, and Mr. Hulbert checked up on the refrigerating system, a 10-ton York upright outfit. He noticed the discharge water was warm, and, against the engineer's grumbled advice, let in two-and-a-half times as much cold water from a well as was ordinarily used.

IT WORKED

The engineer said the head pressure would drop, but Mr. Hulbert went through with his plan, and by next morning the ice cream was hard enough, and the machine in perfect operating condition.

In the early days of mechanical refrigeration, Mr. Hulbert related, units were largely of single-cylinder upright design up to 5 hp., and twin cylinders from that rating up to very large ones, mostly of horizontal design.

"The expansion valves used were like the ordinary hand shut-off valves such as are used to shut off steam," Mr. Hulbert went on. "A few automatic expansion valves were coming into use at that time."

"They were constructed along the same lines as were the steam and gas reducing valves then in use."

A few years after the war, Mr. Hulbert said, the Detroit Creamery brought out a 1-hp. ammonia compressor for use on soda fountains.

"It was constructed on much the same lines as the water-cooled compressors of the present time. The body was a regular two-cylinder type, the condenser a double steel tube coil."

AN INGENIOUS DEVICE

"The water was turned on and off by an ingenious device on one spoke of the flywheel. When the speed of the flywheel reached a certain point, a weight pushed against a spring and into a position so it would strike a small lever and turn on the water. "When the speed slowed down in stopping, the spring pushed the weight back so it struck another part of the same lever and turned the water off. An automatic expansion valve was used and was usually placed under the floor as near the fountain as possible."

"Some fountains were built with ammonia coils and brine tanks, and others were built so as to be used with mechanical refrigeration."

"Thermostatic controls were used, but could not be as easily adjusted as the ones in use now. We nearly always changed the temperature by raising or lowering the thermostat bulb in the brine."

"Raising it into the warmer brine toward the top made the outfit run colder, while lowering it into the colder liquid near the bottom would make it run warmer."

A 'MYSTERY' UNIT

"About this time, or just a little later, I had a strange experience. In a small cross-roads country town on a main highway I called to solicit at a Greek restaurant. The owner asked me if I knew anything about refrigeration, and I replied, 'A little.'"

"He took me into the kitchen and showed me an almost square box equipped with copper coils made up so as to be almost like the coils in use at the present time, except they had no fins."

"An automatic expansion valve

was used, and the refrigerant was sulphur dioxide. The compressor was a twin cylinder outfit with a bolted steel frame and was made up in much the same way as the more simple ones at the present time."

"A thermostatic control was used, and the outfit did good work as long as I was in that section."

THE 'PLOT' THICKENS

"The strange part of it was I was never able to learn who made or sold it. There was no nameplate or other mark on it, nor ever had been, as far as I could learn."

"The owner got it with the place when he bought it, and the former owner went to a distant city. I never saw another one like it, neither was I able to find anyone who had, or could give me any information about it."

"As it had some indications of being shop made, I have thought that perhaps some very versatile and ingenious mechanic familiar with ammonia outfits of that time made and sold it."

'BREATHTAKING' INCIDENT

"Some of the very first of the ice cream cabinets had no shut-off valves. When the service man found it necessary to change a valve all he had to do was to get the brine real cold, let the low-side pressure come up to atmospheric, get the birds and other pets, also the house plants, into a safe place, turn the cabinet on its side with the float valve side up, open all doors and windows, put on his gas mask, and go to it."

"Some of the earlier shut-off valves on some of the makes had no back stops, and if the service man kept on turning the stem to the left, it would finally fly out."

"I well remember my first experience with an accident of that kind. I turned it too far, and the liquid line valve stem shot out onto the floor."

"I picked it up very quickly, held my breath, put it into its place, caught one thread, and then struggled to the door."

FLOWERS DIE, RE-BLOOM

Mr. Hulbert told of one occasion some 15 years ago when a service man was called to a country club in Michigan, and found it necessary to discharge the refrigerating system. He ran a line out of the basement window to carry the refrigerant outside."

Two days later the club manager called the service man's company and said all the shrubbery had been killed by the refrigerant. Investigation showed that this apparently was the case, and the company paid \$700 for the damage. Not long afterwards, the shrubbery shook off the effects and sprang into full bloom again."

MOISTURE REARS ITS HEAD

"For many years while sulphur dioxide was the principal refrigerant used in all but the large outfits," Mr. Hulbert said, "the service men did not realize how much moisture could be carried into a system by being careless about letting air get into it. The air might be purged out an hour later, but the moisture would nearly all be left behind. It was during these early years that stuck-up compressor bodies were much more numerous than during the past eight years."

One particular manufacturer had two certain periods of stick-up trouble with compressors, Mr. Hulbert recalled. It was found that the first rash of sticking-up was due to the composition of the gaskets used. Some of the material softened into a gum under the influence of the sulphur dioxide, oil, and heat."

The second siege, Mr. Hulbert explained, was caused by very fine globules of asphaltum in the oil which collected on the warm surfaces of the bearings, pistons, and cylinder walls."



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Distributor-Dealer Doings

Wage-Hour Rulings Clarifying Status Of Distributors

(Concluded from Page 1, Column 2)

"There are varying situations within this group of wholesalers selling locally," states the ruling. "At times, shipment will be made direct to the customer of the wholesaler from the out-of-state manufacturer. Again, shipment may be made to the wholesaler after the goods have already been resold or ordered by the customer."

"Employees engaged in connection with such sales are an essential part of the stream of interstate commerce, and are included in the phrase 'engaged in commerce.' It is our opinion that wholesalers purchasing their goods from outside the state should comply with the provisions of the Act."

Whether the retail operations of a wholesale distributor are exempt from coverage under the Act depends upon the type of retail setup, the wage and hour division recently declared in another ruling.

If the retail branch of the business is distinct and separate from the wholesale branch—as where a room or rooms are set aside for retail selling—such a retail branch taken alone would ordinarily be considered a "retail establishment," and as such entitled to exemption if the greater part of its sales are made within the state. If, on the other hand, there is no physical separation whatever between the wholesale and retail branches of the business, the exemption does not apply.

Employees of mail order houses engaged in selling electrical appliances in the retail stores of these concerns do not receive the benefits of the Act, according to the recent ruling on "retail establishments."

Under the ruling, this type of outlet maintained by a manufacturer or distributor is considered a separate establishment, and as such is entitled to exemption, if the greater part of the selling is intrastate.

The "greater part" provision, which has been the subject of uneasiness on the part of the retail industries, is determined as "more than 50%" by the ruling.

The exemption of the retail units of the mail order concern also originates in a definition given by the ruling of the term "local retailing capacity" as applied to employees. "Thus," states the ruling, "an employee of a wholesale or manufacturing enterprise who is employed in a local retailing capacity as that term is defined by the administrator, may be exempt from the coverage of the Act even though the other employees of the concern are covered."

Utility companies seeking exemption as service establishments have been declared by the ruling to be performing a type of service which does not come within the meaning of Section 13 (a) of the Act. They are not sufficiently similar in character to "service establishments" to be classified under the exception provision.

Manchester Dealers Join In Advertising Program

MANCHESTER, N. H. — Local appliance dealers cooperated in placing a special 10-page Christmas advertising section in the Thanksgiving Day edition of the Manchester Union, which stressed the theme, "Make It Electrical This Year—Says Santa."

Made up as a regular newspaper itself, the special section contained news articles and illustrations of all kinds of electrical appliances.

Cooperating firms included: Public Service Co. of New Hampshire, which had three pages of advertising; Easy Washing Machine Corp., with a page; John B. Varick Co.; A. A. Mooney Furniture Co.; Chase's; G. F. St. Lawrence & Son; Scott Jewelry Co.; Merrimac Tire & Rubber Co.; Manchester Coal & Ice Co.; Auto Electric Service Co.; Sears, Roebuck & Co.; and Moreau's.

Dealer Claims Paying Salesmen Salaries Is Profitable

(Concluded from Page 1, Column 3)

The salary, though smaller than the man's average monthly earnings, is sufficient to give him a feeling of security and to prevent him from losing his selling ability through worry about paying his ordinary bills.

"Before we established this plan," Mr. Renshaw explained, "we were forced to build a new sales organization from a mere skeleton just as the new selling season was opening. By the time we had the new salesmen trained to sell by our plan of merchandising, the season was half over. Thus we lost valuable selling time while we prepared new men for selling."

This salary plan for dull months keeps the sales force intact, he declared, so that, the moment a new season opens, the organization is ready for sales—with no time lost in hiring and training new men.

Mr. Renshaw estimates that it costs his firm from \$100 to \$300 to train a man to sell in accordance with the firm's policies, and even with that expenditure there is no assurance that a new man will fit into the organization. Hence, the management feels that it is more practical to spend this money in keeping the trained salesmen contented and happy during the lean months, than it is to spending it on finding and training new men.

Even though a salesman may not actually earn his salary during the dull period, if he makes his yearly quota the small loss entailed by the policy is covered, Mr. Renshaw said. Each man has a yearly and monthly sales quota.

Each man is given a regular turn on the floor to give him a feeling of belonging permanently with the organization. He receives his regular commission on all sales made from the floor that day, providing the prospect was not filed previously by another salesman, and of course, all leads he obtains during his floor day are his to follow up later.

Kelvinator's Holiday Plan Outlined

(Concluded from Page 1, Column 1)

are asked to be present on certain dates between specified hours.

These may include present owners, persons on the dealers' prospect lists, and members of women's clubs, church societies, etc. Each guest registers at the door, and registration cards are used for prize drawings, either on each day of the promotion or on the last day, if it is more than a one-day event.

In addition to written invitations, telephone solicitation, advertisements in local newspapers, or radio spot announcements also may be used to bolster attendance.

Prizes may be small appliances, wrapped as Christmas gifts; a \$5 or \$10 down payment on any major appliance purchased; a fruit cake, or other prizes which the dealer may choose. Guests are served refrigerator cookies baked during the day on the electric range; coffee or hot punch also may be served from the range.

Each guest also is given a copy of the Christmas recipe book, prepared by the company for use in the promotion work.

Floor display suggested is a decorated Christmas tree, and a table with buffet setting. In connection with this, an operating refrigerator and range are to be used during the promotion. Dealerships which do not merchandise ranges should serve the fruit cake from the electric refrigerator.

In another display, washers and ironers should be shown as used with Christmas linens. Red and white cellophane bows on the appliances can be used to carry out further the holiday motif.

After the prize drawing each day, the attendance cards are to be turned over for follow-up.

Tracy-Wells Co. Forms Sales Contest Division

COLUMBUS, Ohio—John G. Brooks, formerly assistant to Commander E. F. McDonald, Jr., president of Zenith Radio Corp., has been named head of the sales contest and premium division of Tracy-Wells Co. of this city, is was announced recently by R. C. Hager, general manager of Tracy-Wells Co.

This department will be reorganized and known as the Commercial Expansion Institute, a division of the Tracy-Wells Co., with Mr. Brooks as general manager. Introduction of new ideas in contests, new catalog developments, and enlargement of merchandising and sales force are expected to follow the appointment, officials stated.

Mr. Brooks resigned his position with the Zenith Radio Corp. as of Dec. 1, and after a month's vacation in Florida, will assume his duties with the Tracy-Wells Co. the first of the year.

Prior to becoming associated with Zenith, Mr. Brooks served as secretary to the president of Commonwealth Edison Co., Chicago.

Adds Space Heater Line

OMAHA, Neb.—The Household Utilities Co., 3566 Farnam St., has been appointed as distributor for Nebraska, South Dakota, and western Iowa for the Evanoli circulating home heaters.

Sears Lansing Store Handling Duo-Therm

LANSING, Mich.—Sears, Roebuck & Co. is selling Duo-Therm oil-burning space heaters in its local store under a special "no price cutting" agreement with Motor Wheel Corp., local manufacturer of the units.

Under the sales arrangement, Sears has agreed to sell the heaters at established list prices.

S. J. Wessling of the appliance department of the Sears Lansing store says that the arrangement was made so the Sears store could serve the many employees and friends of Motor Wheel Corp. in the Lansing area who are interested in purchasing Duo-Therm heaters.

Sorenson Co. Named Crosley Distributor In Iowa

DES MOINES, Iowa—The H. E. Sorenson Co. here has been appointed distributor for Crosley Corp.'s line in 67 central Iowa counties.

Jacobs Franchised as York Distributor

CINCINNATI—B. & J. Jacobs Co. has been franchised as exclusive distributor of York Ice Machinery Corp.'s commercial air conditioning and residential heating and air-conditioning equipment in southwestern Ohio, southeastern Indiana, and northern Kentucky.

Philco Branches Adding Washer, Record Lines

DETROIT — Distributing subsidiaries of Philco Radio & Television Corp. here and in three other cities are extending their activities by taking on lines other than radios and room coolers, it is reported.

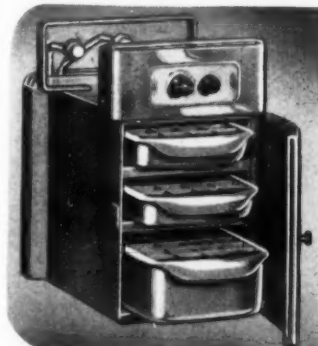
Philco Radio & Television Corp. of Michigan has taken on the distribution of Columbia, Vocalion, and Brunswick records, according to E. A. Orth, sales manager, but no other additions are contemplated at this time. The New York distributing branch also has undertaken distribution of the phonograph record lines.

First departure from the strict radio field was taken by the company last spring, when it began nationwide distribution of room coolers manufactured by York Ice Machinery Corp.

Philco Radio & Television Corp. of Illinois, Chicago, in one of the latest diversification moves, has begun to distribute the Easy washing machine line in that territory. L. C. Wiswell formerly handled the line in the Chicago area, having been distributor for the past three and a half years.

Diversification move is designed to allow the subsidiaries year-around sales activity, making them much the same as independent distributors in that respect. Each of the four organizations, it is said, will be allowed to make its own arrangements for handling other products.

THE BUYER'S GUIDE



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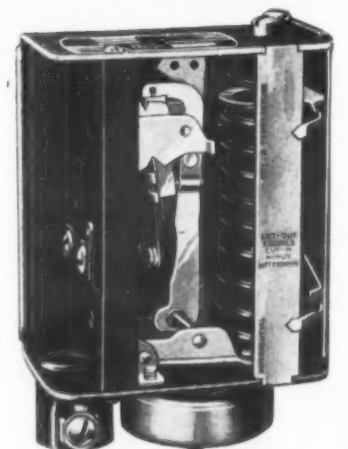
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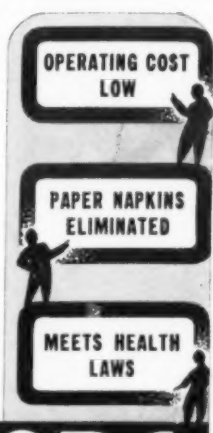
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Engineering

Problems Presented By 'Humidity' Factor Are Aired At A.S.R.E. Informal Session

NEW YORK CITY—There are many problems in humidity as it relates to air-conditioning and refrigeration applications which still await solution, it was revealed at an informal conference on "The Role of Humidity in Air Conditioning and Refrigeration," held during the annual meeting last week here of the American Society of Refrigerating Engineers.

The informal session, which was an original feature at this year's meeting, was under the general direction of Milton Kalischer, Westinghouse engineer, who began the discussion by outlining some of the problems with respect to humidity which now exist.

HIGH R. N., LOW TEMP.

"In food preservation jobs where humidities of 90 to 95% are demanded, a problem arises, especially when it is necessary to maintain temperatures near 32° F. in the same installation.

"In small refrigerators, such as household units and butcher boxes and display cases, the problem of maintaining proper relative humidities is not only an engineering matter, but one in which cost is a factor, since such refrigerators are sold under highly competitive conditions," Mr. Kalischer pointed out. "Some means come to mind to pro-

vide the proper humidity conditions, but the cost would probably be too great.

"Another problem that arises in connection with means for increasing the humidity is that the manufacturer or installer cannot expect any help from the user in maintenance of the equipment. Allied with this is the factor of contamination. It would be very unwise, for example, to put a water reservoir type of humidifier in a meat market refrigerator, for the fact that the butcher would never take the proper care of it."

Mr. Kalischer designated two problems with respect to the factor of relative humidity in air-conditioning systems; (1) the location of the humidifying element in the air-conditioning plant; and (2) proper relative humidities for comfort conditions.

POSITION OF SPRAYS

"In present practice the sprays are generally placed ahead of the coils, which result in a considerable amount of moisture being deposited on the coils. Some consideration might be given to the possibility of placing the spray at the coils' outlet, with eliminator plates being used.

"Experience has shown that considerations other than a mere reference to a 'comfort chart' are needed

to provide suitable conditions in air-conditioning installations," said Mr. Kalischer. "One thing that seems apparent is that the length of time and number of occupancy be taken more into consideration in determining proper relative humidities for comfort conditions."

Other problems listed by Mr. Kalischer were humidification below freezing and measurement of humidification below freezing, and the measurement of humidities in small units, such as household refrigerators.

Discussion from those attending the conference brought out a great many points of practical information concerning the application of the humidity factor in both storage and human comfort applications.

The question arose with respect to the conversion of existing systems in which a "Sterilamp," the ultra-violet ray means of inhibiting mold and slime in foodstuffs, was to be installed. This presents a problem, it was pointed out, because to install a whole new system just to accommodate the Sterilamp would be out of the question in the vast majority of cases.

WITH THE 'STERILAMP'

At the same time, the greatest advantages accrue in the use of the Sterilamp when high relative humidities are employed.

Other than using some sort of apparatus which would definitely add to the moisture content of the air, it was suggested that the relative humidity be increased by increasing the coils in the system and adjusting the controls so that more evaporator surfaces would be used together with higher suction pressures, thus enabling higher relative humidities to be maintained with satisfactory temperatures. It was also suggested that forced-air circulation be used on all such jobs.

The discussion led into a short diversion on the subject of proper conditions for the preservation of celery in storage. Nels Rosberg of California Consumers Corp., Los Angeles, suggested conditions of 86% relative humidity at 34° F., with which most everyone seemed to agree.

BELOW FREEZING PROBLEM

Next the discussion turned to the question of humidifying a room kept at below-freezing temperatures. Dr. Mary Pennington, famed U. S. government researcher on matters of food preservation, declared that the use of snow-ice spread around the room was a solution to this problem. In such a case, no forced-air circulation should be used, she warned.

A question also arose as to how to prevent moisture deposition on walls of a cold storage room, in which one wall adjoined a room at lower temperatures than the room in question, with other walls either facing warmer rooms or the outside atmosphere. This question is apparently applicable to cold storage warehouses and to locker storage plants. No general solution was advanced, although the use of strip heaters and a special type of wall construction were suggested.

When the discussion got to the matter of relative humidities in air-conditioning work, a lively debate developed over just what constituted optimum conditions.

WHAT IS COMFORT?

The head of an American Society of Heating & Ventilating Engineers committee admitted that experiments had indicated that calculations of wet-bulb temperatures by standard psychrometric chart methods was wrong by the margin of several degrees, and that this no doubt was influencing some new considerations on optimum conditions.

An applications engineer for a New York air-conditioning dealer stated that in his opinion relative humidity meant little, if anything, that it was an erroneous value on which to base comfort.

"Total heat differential between inside and outside conditions is a far better measure of optimum conditions," he declared.

Mr. Kalischer posed the question: "Is the answer in keeping the inside and outside dry-bulb conditions equal, and reducing relative humidity?"

John R. Parsons, New York physicist whose research and writings on comfort conditions have attracted attention, declared that relative humidity is very important, because of the fact that the skin temperature is at dewpoint.

"There are 'moist' people and there are 'dry' people, and this fact must be taken into consideration. Often a comfort chart condition is unsatisfactory to many people, because of the great differences in their resistance to conditions, and their reactions to it. Low relative humidities, for example, have a very unpleasant effect on 'dry' people.

"I believe that one change which would have a highly beneficial effect would be to change the inside conditions month-by-month, rather than day-by-day. In other words, the conditions should be made to fit the seasons, and to give the people a chance to get used to it, and by so doing I don't think there would be any great complaint of shock, etc.

"I also believe that the temperature differential should be less. In large stores, offices, etc. wouldn't it be wiser to raise the temperature to a point satisfactory to those working in an air-conditioned place, rather than those coming into it as visitors or customers?"

This point was given some debate, most people agreeing that the differential should be lower than it has been in many cases, but there being some argument on the point that it should be regulated to suit the whims of certain employees working in an air-conditioned establishment.

Table Containing Data On Pressure Drop In Suction Lines Prepared

BUFFALO—Comprehensive data concerning pressure drop in suction lines is offered in a report prepared by George H. Clark, chairman of the R.S.E.S. national educational and examining board, E. Gyax, chief engineer of Curtis Refrigerating Machine Co., and Karl S. Willson of Ansul Chemical Co. for the Refrigeration Service Engineers Society.

Mr. Clark explains that he, Mr. Gyax, and Mr. Willson had individually conducted tests and experiments the results of which happened to conform with one another, and thus had concluded that their findings represented a definite formula.

Accordingly, the three men undertook further cooperative work to determine pressure drops in various sizes of pipes under various conditions, believing that such information would be valuable to the refrigeration industry.

"The data has since been found to check quite accurately a general formula for fluid flow, from which a comprehensive table of data has been prepared," Mr. Clark states.

"The test apparatus consisted of various sizes (1/2 to 20 hp.) of Curtis compressors, an electric calorimeter which acted as evaporator and superheater, and the test pipe to which suitable gauges were attached at each end in order to measure the pressure drop.

"The calorimeter served to measure the operating capacity under the given conditions. The feed liquid entered the calorimeter at 90° F. (room temperature) and the gas was superheated to 65° F.

"The temperature of evaporation was maintained at 0, 20, and 40° F. in the various tests. Copper tubes having dimensions (outside diameter) of from 1/2 to 2 1/2 inches were used. The tubes were formed into coils free from sharp bends, dents, and the like."

With this equipment Mr. Clark, Mr. Gyax, and Mr. Willson conducted experiments to determine pressure drop.

For calculating pressure drop in refrigerant gas lines, the three men decided upon the following formula:

$$\Delta P = \frac{194,000 f T^2 V}{D^5 H^2}$$

and the F term reduced to

$$Z D H$$

where T = refrigeration capacity in tons, V = cu. ft. per lb. of the gas passing through the pipe, and H = effective refrigeration in B.t.u. per lb.

In this formula, Mr. Clark explained, the various other terms used are defined as follows:

P = pressure drop in lbs. per sq. ft.

f = friction factor, no units.

D = actual inside diameter of pipe in inches.

F term = convenient form of referring to "f."

Z (or z) = viscosity relative to water at 68° F. (centipoises).

To illustrate the formula, the following sample calculation for methyl chloride was given:

Gas evaporated at 0° F. and superheated to 65° F. = 207.8 B.t.u. per lb.

90° liquid = 48.0 B.t.u. per lb.

Effective refrigeration per lb. = 159.8 B.t.u. per lb.

Then for 3 tons of refrigeration in the 1 1/2-inch pipe, the F term becomes

$$\frac{9.793 \times 3}{.0108 \times 1.025 \times 159.8} = 16.6;$$

f = .0043; and

$$P = \frac{194,000 \times .0043 \times 3^2 \times 5.74}{1.025^5 \times (159.8)^2}$$

1.48 lbs. per sq. in.

"In this case," Mr. Clark points out, "since the calorimeter acted as both evaporator and superheater, the heat used to superheat the gas is included. In the usual calculations, the superheat energy would not be included.

"The formula takes into consideration the viscosity of the fluid, the various friction factors, the type of pipe, and other contributing factors.

"There are two kinds of flow in pipe: streamline (or viscous) direct flow, which is very slow and is not much used in refrigerant; and turbulent flow.

"All the results in the formula tests are based on turbulent flow.

"Any flow with a friction factor of less than .14 is of the streamline type, and any with a friction factor above .14 is of the turbulent type.

"When the experimental and calculated data were found to check satisfactorily, it occurred to the authors that the pressure drop information might be extended, modified, and listed in tabular form for convenience."

This table, as prepared by Mr. Clark, Mr. Gyax, and Mr. Willson, is a cross-reference index based on and presenting the following information: actual inside dimensions of tube (in inches); temperature F.; tons of refrigeration for methyl chloride, sulphur dioxide, and Freon (F-12).

Body of the table gives the pressure drop in suction lines in lbs. per sq. in. per 100 feet, 80° liquid to valve, and 60° gas in lines.

Mr. Clark informed the service men that experimental tests on pressure drop in liquid lines are being carried on at present.

Andrews Joins McCray

KENDALLVILLE, Ind.—C. M. Andrews, formerly associated with the Ingersoll Steel and Disc division of Borg-Warner Corp., has joined McCray Refrigerator Co. here in charge of the enameling division.

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Engineering

Loewy Says Present Refrigerators Are Over-Styled—Sees New Design Trend

By Raymond Loewy, Industrial Designer

THE two major national products that seem most clearly to define engineering and design progress are the automobile and the electric refrigerator. That trends in presumably unrelated fields should so closely parallel one another is perhaps accounted for by the fact that our best refrigerator designers have frequently had early training in automobile design.

From the point of view of the industrial designer, there is a very close relationship between the evolutionary phases of the automobile and that of the refrigerator—especially so far as exterior form is concerned.

We find in both these products a search for simple, compact, and economical form. They are both mass production items, made of sheet metal; die and stamping processes are similar. Style is an important factor to both.

WHAT CONSUMER CONSIDERS

From the viewpoint of the consumer the same considerations that influence the purchase of a new automobile are quite likely to be those determining the acquisition of a new household refrigerator: price, serviceability, appearance.

When asked to design a new automobile the designer strives for more efficiency, the use of new materials, ease of maintenance, durable finish, silent operation, economy of operation, and maximum of useable space. These are the same objectives he has when designing a new refrigerator.

I think there is no doubt that the trend in automobile design has strongly influenced that of most household products: stoves, washing machines, refrigerators, etc. The public has been conditioned to an appreciation of more simple form and with this consequent improvement in the general level of taste, there is a growing demand for better looking merchandise.

PUBLIC WANTS BEAUTY

Aesthetic considerations that were once associated with only the "upper brackets" have now assumed the proportions of a mass movement. Year after year manufacturers have given to the public more advanced, progressive, and logical forms. The widespread changes that have transformed the one-time "Model T" into the sleek, streamlined form of the 1939 vehicle are reflected in the transformation of the old wooden icebox into today's gleaming white unit of household efficiency.

As we want to know "What is the future of a space saving standpoint, ask ourselves: "What is the future shape and form of the household refrigerator?" In the light of past experience the industrial designer can, I believe, make some interesting predictions.

First of all the present electric refrigerator is over-styled. Since we have already drawn the analogy between design trends as they occur in both the automobile and the refrigerator, it is interesting to note that the present car is also over-styled. The excess of chrome trimming and decoration now present will gradually disappear. The same market that will call for more simple, functional types of automobiles, will likewise be inclined to reject the over-styled refrigerator.

TOMORROW'S REFRIGERATOR

The refrigerator of tomorrow will be cheaper and also more efficient. For instance, the present ratio of cubic content to gross volume in current refrigerator models is uneconomical. This relationship of useable space to total bulk can and will, I am sure, be greatly improved.

The present modes of caloric insulation are quite crude and wasteful. An acoustical insulation standpoint. New, improved methods are bound to appear.

I have just returned from Sweden

Predicts Design Change



RAYMOND LOEWY

where I have had the privilege of visiting the research department of one of our clients—manufacturers of refrigeration equipment. In my opinion, it is the most advanced laboratory of its kind that I have yet seen.

They have, at great expense, built a room so perfectly constructed from an acoustical insulation standpoint that its interior nearly achieves absolute silence. I spent a few minutes in it and heard the blood flow through my arteries—my lungs expand and contract. It was most impressive and rather frightening.

The room is used to test refrigerators from a noise standpoint and is a great help in achieving silent operation. The tooling department of this factory would certainly be envied by many of our up-to-date American manufacturing concerns.

There is no doubt that tremendous advances will be made in the next few years in refrigerating engineering, not only abroad, but in this country as well. These improvements will lead to new design forms.

FUNCTIONAL DESIGNING

As we know, the industrial designer is not concerned with aesthetic factors alone. While his object is the development of a product that is attractive and appealing—an item of wide sales appeal—he is primarily concerned with function. Before attempting to design a new refrigerator, washing machine, or coffee grinder, the designer makes an exhaustive study of the mechanical parts.

Good design proceeds from good engineering, and engineering research work now being done in the laboratories of large American and European corporations will be an impetus to the creative faculties of the designer. The reverse is true too, and the demands of the designer for simpler, more compact working parts or insulating devices will force technical improvements.

In Europe there seems to be a large and growing market for built-in refrigerators—that is, small sized boxes that can be built in flush with the kitchen wall or kitchen cabinets.

TRENDS OF FUTURE

It is likely that such a trend will also be established in this country. Doors, instead of swinging out and therefore being in the way of the operator, will be of the disappearing type—that is they will pivot and slide within the overall dimensions of the cabinet.

Another change that we are likely to see soon is the replacing of the present type of single temperature cabinet by that of a dual system; that is, the provision of two compartments, one very cold and the other less cold. This might mean also the use of a two-door design, rather than that of the single entry now provided.

Everyone knows that each time the refrigerator door is opened, the temperature inside rises. Watch a meal in preparation and one is struck by the cold waste involved through frequent opening of a large door to take out a bottle of milk, a bit of butter, a couple of eggs. Some

sensitive automatic device should correct this condition more quickly than it is now done.

The present type of refrigerator shelf is still very crude. Possible use of new materials, such as glass and plastics, will, I am sure, mean the development and design of far better interiors without interfering with the interior air circulation necessary in order to avoid "sweating."

In connection with the design of refrigerator shelves, I believe our organization has already made a contribution in the right direction. It occurred to me several years ago, while working on the design of an automobile that the perforated aluminum radiator grille used at the time might be translated to the refrigerator, and in the Coldspot refrigerator of that year, I made use of a new kind of shelf that was none other than sections of automobile grilles.

The trend in refrigerator design will be toward the achievement of smooth, unbroken surfaces. Visible screws, for instance, will be eliminated; hinges will be set flush; door handles will not project. Cost of shipment will be reduced. Here again, it is more than likely that refrigerator design will follow that of the automobile in its movement toward crisp, "unfussy" lines.

More care will be taken in the design of accessories, such as trays, evaporator door, temperature control, etc. Our organization has recently done some research along these lines and the results are most encouraging.

Barton Named Assistant N.Y. Manager For G-E

SCHENECTADY, N. Y.—Appointment of T. F. Barton, district engineer of the New York district of General Electric Co., as assistant manager of the company's New York district has been announced by H. H. Barnes, Jr., commercial vice president. The appointment becomes effective Jan. 1.

Mr. Barton entered G-E's testing department in 1906, immediately after graduation from Clemson A. & M. college. He was transferred to the direct-current engineering department in 1909, and from 1911 to 1912 was engaged in construction engineering work for the New York district.

He served in the engineering department of the New York office from 1912 to 1917, when he returned to Schenectady as a member of the central station engineering department. He became New York district engineer in 1927.

Mr. Barton has twice won Charles A. Coffin Foundation awards for outstanding contributions to the electrical industry. He is a fellow of the American Institute of Electrical Engineers, former chairman of that organization's metropolitan section, and chairman of its mid-winter convention committee. He also is a member of the Bankers and Engineers Club of New York. He resides in Montclair, N. J.

John Livezey, Insulation Contractor, Is Dead

PHILADELPHIA—John R. Livezey, insulation contractor here, died Nov. 19 at his home in Elkins Park, Pa. at the age of 71.

Starting his business career in 1892 as an installer of refrigerating machinery, Mr. Livezey became interested in the insulation field while supervising installation of some refrigeration equipment in a pair of steamships being constructed here.

Discontinuing his activities in the refrigerating machinery field, he started his own insulation contracting business here in a small way, operating under Nonpareil Cork Mfg. Co. When this firm was taken over by Armstrong Cork Co., Mr. Livezey entered into a contract with the new company.

Later, negotiations with Keasbey & Mattison Co. resulted in the appointment of Mr. Livezey as approved applicator and super-distributor for this organization, entitling him to sell and apply the heat insulation materials which the firm manufactured.

Mr. Livezey was a pioneer in the field of cold storage insulation, and his organization executed some of the largest cold storage insulation contracts in the East.

Refrigeration Engineer Wins Honors Award

NEW YORK CITY—Wilfred E. Johnson, 33-year old design engineer of the General Electric Co., was presented with the newly established gold medal award for outstanding achievement by Pi Tau Sigma, honorary engineering fraternity, at "Honors Night" of the American Society of Mechanical Engineers during its fifty-ninth annual meeting.

Mr. Johnson, 1930 Oregon State graduate, was selected from candidates proposed by engineering schools, local sections of A.S.M.E., and Pi Tau Sigma members.

He has been associated with G-E for the past eight years.

Rutgers Offers Home Air Control Course

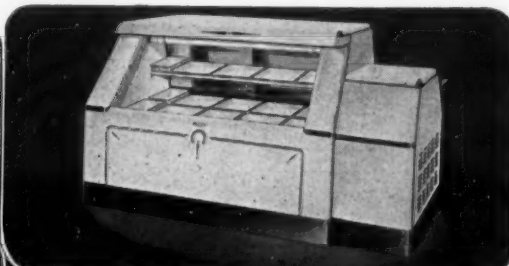
NEW BRUNSWICK, N. J.—Correspondence courses in air conditioning, heating and ventilating, oil burner engineering, refrigeration, and heat, are offered through the extension division of Rutgers University here.

Rutgers University cites the growing use of home-study courses for supervised groups, when a number of employees enrolled in a given course meet on the property of the employer at regular intervals with a company engineer, or other leader, to discuss the current lesson while carrying on their actual "recitation" by correspondence.

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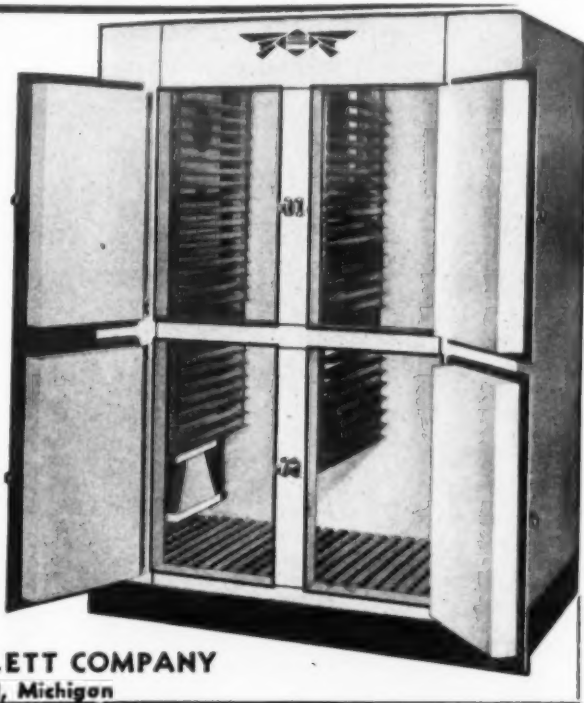
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Industrial Relations

Processes of Production Described For Midwest Employees In Magazine

GALESBURG, Ill.—To help employees become better acquainted with the products they help produce, Midwest Mfg. Co. is publishing in its employee magazine, The Cabinet Builder, a series of articles explaining various processes and departments involved in the manufacture of Midwest products. Each article is illustrated with a photograph.

First article in the series appeared in the December issue of the company publication. It explains the operation of the pickling department, where sheet iron is cleaned and processed before enameled, and was written by Roy Johnson, plant engineer.

Rolling Cafeterias Keep Workers Enthusiastic

PITTSBURGH—Feeling that eating frequently throughout the day enables the employees to accomplish their work with greater enthusiasm and wards off fatigue, the Westinghouse Electric & Mfg. Co. has installed rolling cafeterias at its East Pittsburgh plant.

The rolling cafeterias, which were designed by the manager of the employees' restaurant, are taken through the plant five times each day, and the workers can obtain milk, soft drinks, coffee, sandwiches, cake, pie, and ice cream.

Circus To Feature 5th Servel Christmas Party

EVANSVILLE, Ind.—Fifth annual Christmas party for employees of Servel, Inc., manufacturer of Electrolux refrigerators, will be held Dec. 22 and 23 at the Coliseum here under the direction of the Servel Employees Association.

A one-ring circus with acrobats, clowns, and other acts will feature the party. The Servel Santa Claus will distribute candy, fruits, and nuts to children of employees.

Westinghouse Employees Get 3% Wage Bonus

NEW YORK CITY—A 3% monthly profit-sharing bonus for all its employees was announced recently by Westinghouse Electric & Mfg. Co. as a result of improvement in business and earnings. The bonuses, figured on the base pay rates of individual employees, ranged from 16% in August, 1937, to nothing in October of this year. This extra payment is calculated from net earnings of the company for 3 preceding months.

J. E. Otis Nominated For Post In Manufacturers' Group

CHICAGO—J. E. Otis, Jr., of the Stewart-Warner Corp., Chicago, has been nominated for the office of first vice president of the Illinois Manufacturers' Association.

Westinghouse Salaried Workers Given 40-Hour Week Plus Overtime

EAST PITTSBURGH, Pa.—Westinghouse Electric & Mfg. Co. will begin paying overtime immediately to all nonexempt salaried employees working more than 40 hours a week, thereby anticipating by three years the final provisions of the Labor Standards Act, it was announced recently by George H. Bucher, president of the company.

The plan will be made retroactive to Oct. 24, when the act went into effect, and it will benefit about 12,000 salaried employees.

"The law specified that overtime must be paid now to all nonexempt employees who work more than 44 hours a week," Mr. Bucher explained. "The hours are to be reduced to 42 next year, and 40 in 1940. The company's policy is to put the full requirements of the act into force at once, making overtime payments on the 40-hour basis immediately."

Notices explaining this plan were posted in all company plants. In part, the notices read: "Westinghouse company announces that it is complying with the Fair Labor Standards Act insofar as interpretations of the law issued by the administrator make such action possible."

"Any questions which may arise in any employee's mind as to whether or not the rulings which have been made by the company are being properly applied in his individual case should be presented to the industrial relations representative for consideration and satisfactory clearance."

"Overtime will be paid to all salaried nonexempt employees under the act for time worked in excess of 40 hours per week. Although the law specifies that overtime must be paid over 44 hours per week, the company policy is to anticipate the requirements of the act which will reduce the limit of hours worked without overtime to 40 hours per week by 1940 and will make payment for overtime on this basis immediately."

"All overtime salaried employees will be paid at one and one-half times the earned hourly rate for each day."

This plan is in accordance with the company's long-standing policy of shortening working hours and improving working conditions as rapidly as improved techniques and industrial conditions permitted. Hourly paid employees were on the 40-hour week prior to the passage of the Fair Labor Standards Act.

General Motors' 2 Plans To Provide Security Explained By Sloan

NEW YORK CITY—How the two benefit plans available to 150,000 General Motors Corp. hourly wage employees having a service record of two or more years, will operate was explained by Alfred P. Sloan, Jr., chairman of the board of the corporation.

Purpose of these plans, which go into effect in 1939, is "to provide greater income security for a broad coverage of our employees," Mr. Sloan explained, and went on to say that both plans are the outcome of extensive experiments which have been carried on by General Motors in several of its plants during the past years in an effort to develop means whereby greater stability might be provided for as large a group of its factory employees as possible.

All hourly wage workers with five or more years of service, who are in the employ of the corporation any time during December, 1938, are eligible to participate in the income security plan, which provides that the corporation, in event of curtailed employment, will advance the employee, at his request, the amount necessary to bring his weekly earnings up to 60% of 40 hours' pay.

"The weekly guaranteed income will consist of (a) pay for the amount of work performed for the corporation; (b) pay for any other regular employment; (c) unemployment compensation; (d) an advance to be made by the corporation to insure a minimum weekly income of at least 60% of standard," Mr. Sloan stated.

The advance is payable only in

Executives & Employees Enjoy A Picnic



An excellent example of promoting good employee relations is illustrated in the picture above, taken at the annual clambake held for employees of Brunner Mfg. Co. early this fall. All sorts of athletic contests filled the program for the day, interrupted only by lunch at noon, and climaxed by the clambake in the evening. Chief rule was "no shop talk."

terms of opportunity to work and bears no interest. When weekly earnings exceed 60% of standard, the employee will repay advances weekly at the rate of one half the amount earned in excess of 60% of standard.

The second plan, the lay-off benefit plan, will be available to employees who have two or more years and less than five years of service. The pay-off benefit plan works the same as the previous plan, except that the employee receives no more than 40% of the standard weekly earnings and the total advance made by the corporation is limited to an amount equivalent to 72 hours' pay at the employee's latest average hourly rate.

After explaining the income security plan, Mr. Sloan said that "every employee under the plan is enabled to make his personal arrangements for a full year ahead with assurances that in no week will his income be less than 60% of standard weekly earnings."

"The income security plan, when declared operative for any particular year, is independent of changing business conditions," Mr. Sloan declared.

Mr. Sloan called attention to the fact that the corporation is not guaranteeing work for which there is no need. "However," he added, "using the resources of the corporation as an income stabilizing factor, giving the largest group of employees possible a definite assurance of a substantial minimum weekly income for a definite period is, according to my beliefs, sound and highly desirable."

The usual provisions were made following for suspension of the plans in case of fire, floods, wars, riots, strikes, or other circumstances beyond the control of the corporation.

In conclusion, Mr. Sloan said that consideration is being given to a suitable plan applicable to approximately 37,000 salaried employees, to be announced shortly.

Revere Co. Letter Praises Employees' Flood Work

NEW YORK CITY—High tribute was paid employees of the New Bedford plant of Revere Copper & Brass, Inc. for their efforts to save plant property during the September hurricane and flood by C. Donald Dallas, president, in the second in a series of letters in the "Know Your Company" program of Revere Copper & Brass, Inc. The letters were distributed recently to company employees.

In addition to praising the workers at the New Bedford plant for their courage and loyalty, Mr. Dallas also commented on the support given by employees from other plants of the company who assisted in the rehabilitation work.

The severe damage done to the plant by the hurricane and accompanying tidal wave was described in the circular which was illustrated with pictures of the plant taken during the height of the storm.

Method of Organizing Campaign For Safety Outlined By Headden

NEWARK, N. J.—Belief that the cost of a planned safety and accident prevention program is negligible as compared with the benefits to the individual employee and with the decreased interruptions to production, has been expressed by Mr. E. B. Headden, vice president of Motors Improvements, Inc., Newark.

In an article, "Planned Safety Pays in Many Ways," in the Executives Service Bulletin published by the Policyholders Service Bureau, Group Insurance Div., Metropolitan Life Insurance Co., Mr. Headden explained the intensive safety program which the Motors Improvements, Inc. has had in effect for the past year as a result of a warning issued by the company's insurance carrier.

Until the time this warning was received, Mr. Headden pointed out, the company had been doing the conventional things to curtail accidents, but had not looked on safety work as a major function.

The company took the following steps to improve the safety program after consultation with the engineer of the compensation insurance company, Mr. Headden reported:

Reorganized the safety committee and held weekly instead of monthly meetings; laid down a rigid routine to be followed in case of accidents; authorized the safety committee to inspect any new equipment before it is turned over to production; held inspection tours by Mr. Headden and committee members; displayed safety posters; paid for employees to take first-aid training courses; trained new employees to adhere strictly to safe working practices; established a warning system; required operators to have first-aid for all minor injuries, and gave insurance inspectors passes to go through the plant alone.

Mr. Headden also pointed out that no departmental contests are held nor is the cost of an accident charged to the departments concerned, as it is feared that these practices might be influential in keeping employees from reporting for first-aid treatment.

The company has only three open cases with the insurance company at this time, Mr. Headden declared, pointing out that in 1936 when the company had 388 employees the per cent of premium was 77.3, in 1937 with 547 employees the per cent of premium was 55.0, and this year with 525 employees the estimated per cent of premium is 33.0.

C.I.T. Declares Dividend

NEW YORK CITY—Regular quarterly dividend of \$1 a share in cash on common stock, payable Jan. 1, 1939 to stockholders of record Dec. 10, 1938, has been declared by directors of Commercial Investment Trust Corp.

THE BUYER'S GUIDE

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Message No. 18

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WRITE FOR CATALOG

UNCOVERING THE CONVENTION

NOTES ON THE A.S.R.E. ANNUAL MEETING

BY PHIL B. REDEKER

'Resistance' To Humor Is Overcome

The general atmosphere at the A.S.R.E. technical sessions is usually pretty serious, so deadly serious in fact that it would justify the characteristic remark of Charlie Gary of Henry Valve Co. that "Things are pretty grim."

Occasionally, however, someone injects a little humor into the proceedings. Such an individual was John Parsons, New York physicist who has been twitting the engineers for some time about their arbitrary standards for "comfort" in air-conditioning installations.

At the informal session on humidity, which eventually developed into a warm but friendly debate about "comfort conditions" in air conditioning, Mr. Parsons was speaking of the reactions of various types and classes of people to different conditions.

"The resistance of Junior League girls, for example, was found to be quite low," he stated without cracking a smile.

But none of the engineers or even Dr. Mary Pennington of the U. S. government failed to appreciate the possibilities of double meaning in that remark, worthy of so subtle a jester as Ed McGovern of the R. & H. Chemicals Department of E. I. du Pont de Nemours & Co., Inc. (I certainly wish they would do something about the name of that company.)

Parsons' Instrument Classifies Salesmen

Mr. Parsons, who has developed an instrument which is supposed to determine when people are comfortable or to assure them that they are comfortable (we're not quite sure which), says that in reality the instrument is more accurate in determining what kind of equipment an air-conditioning salesman is representing.

Apparently a salesman for a system employing a chemical dehumidifier will look at the instrument and say something to the effect of "Ah-hah! You see. The temperature's too low and the relative humidity is too high," while a salesman for a system employing mechanical refrigeration would say something quite the opposite.

There is an air of perfection about everything that Crosby Field does. As retiring president he conducted the induction of the new officers of the society with a dignity and a feeling that seemed to clothe the event with more than its usual significance, so much so that there was an outburst of spontaneous applause when the ceremony was completed.

However, some comic relief was supplied to this solemn occasion almost immediately, as Frank Zumbro, veteran Frick engineer, fell off his chair and almost off the platform while seating himself just after he had taken the oath of office as a director.

How To Win Friends

Geo. Taubeneck found that there is a faster way of "Winning Friends and Influencing People" than by reading Dale Carnegie's book, when he won a door prize of a bottle of champagne at the banquet Wednesday night. He was mobbed before he could make his way back to the table.

One of the attractions at the banquet was a dark-eyed fortune teller, who was something of a confused lady before she got her bearings. Unfortunately for her the "bachelor's table" (young members without wives or if they had one didn't bring her) was located nearest the door, so that when she asked to speak to Dave Fiske, secretary of the society, she met several "Mr. Fiskes" in rapid succession, in the person of

Ken Newcum, Dick Dawson, Wid Siegfried, and "Rick" Rieckelman.

Sanitary Fun

The boys also had fun slipping ice into the coat pockets of fellow banqueters. Besides being appropriate for a refrigeration banquet, this gag is more sanitary and less unpleasant than the trick of dumping the contents of ash trays into pockets, so familiar to all who have attended distributor banquets.

The first day's technical program was so loaded with speakers who seemed to be proposing substitutes for compression-type refrigeration systems that even Crosby Field took note of it in his remarks at the luncheon, stating that the meeting was seemingly being invaded by "The Anti-Mechanical Refrigeration Society."

Apparently either the society or the opposition is adhering to the old political adage, "If you can't lick 'em, join 'em."

Talk of 'Good Old Days' Brings a Sigh

R. C. "Bob" Doremus, engineer for the Detroit Ice Machine Co., almost brought tears to the eyes of some of the old-timers when he got to reminiscing, at one of the technical sessions, about the good old days of the horizontal compressors, the Great Lakes Engineering Co. and the Huetteman ice machine, and of the then virgin markets for 200-ton installations. Some of the veterans like C. T. Baker, Frank Zumbro, H. C. Guild, A. W. Oakley, Lew Williams, and others just kind of looked into the distance and sighed.

Art Schellenberg brought his charming wife to the banquet late, whereupon the bachelor's table found a place for her immediately, and set up a chair for Art out in the hall. He managed to fight his way back into the banquet room, but I doubt if he ever did get a dance with his own wife.

Call For Mr. du Pont

Ed McGovern of the R. & H. Chemicals Department of E. I. du Pont de Nemours & Co., Inc. (there she goes again), when confronted by President A. H. Eustis of the Virginia Smelting Co. and President H. V. Higley of Ansul Chemical Co., remarked: "Guess we should have brought Lammot du Pont along to be properly represented in this league."

Mr. Eustis reports that he got in a lot of tennis last summer, and awaits anxiously the renewal of his annual match with your correspondent at the Spring A.S.R.E. meeting.

Because of unfavorable weather conditions I'm never in "peak" form by the time of the Spring meeting. Guess I'll have to work out a combined business-and-training southern trip about a month before the meeting takes place.

Why a Convention?

At luncheon one day of the convention a young engineer—earnest, respected, and hard-headed—raised a question about the technical programs at the annual conventions.

"Just what percentage of those attending the sessions," he inquired, "would find something of real interest, something to take away with them, in any particular paper that we might choose at random among those on the program?"

Those sitting with him at the table agreed that the percentage of those members attending the sessions who would have an active interest in any particular paper that might be named would probably be rather small.

"Why then, have a convention?" the young engineer queried.

Older members of the society were quick to respond with their answer.

"It isn't so much the giving of the papers at the convention that is important, it is the research and preparation that goes into them," they explained. "The convention is only a medium for making the information public, for adding it to the industry's general knowledge, a place to put it up for debate and discussion, so that the information will either stand or be sent back for revision."

"But even if there were no papers prepared, given, and debated, a convention would be highly desirable for the opportunity it affords to have the engineers meet and know one another, for the spirit of good fellowship which it engenders."

"Such a spirit of cooperation and good fellowship pays dividends to both individual companies and to the industry in general," the older members continued.

"The story is told of one of the leading manufacturers in the industry that it was faced with a manufacturing problem that was causing much trouble, that upon the invitation of fellow members of the society from another company whom they had met at conventions they visited the rival concern's factory and learned how the problem could be solved, and in return they contributed to the solution of a problem which was troubling their host. And therein lies an example of the real value of the society—and its conventions."

New Food Preserving Ideas Get Spotlight At A.S.R.E. Convention

(Concluded from Page 1, Column 5) various phases of the technology of applying refrigeration to food processing and preservation—from field to the consumer.

Emphasis was again on frozen foods, with considerable discussion on new freezing methods, proper holding temperatures, and packaging. Refrigeration of beverages also was spotlighted on the program.

Other general convention topics were "Air Conditioning Developments," and "Refrigeration in Industry."

That the convention program had much of interest was indicated by the attendance, which was said to have passed the 300 mark, largest attendance at a winter meeting in years.

FIELD RECOMMENDS

In his address as retiring president, Col. Crosby Field set forth a platform for the society to follow. Briefly, he recommended:

A widening of the society's cooperation with the colleges and their research, particularly in relation to the technology of food processing and distribution.

Promotion of a program to see that the standards which the society promulgates get adopted by municipalities and state legislatures.

Formulation of a cooperative plan of some kind to provide "professional publicity," a means whereby the engineer can be exposed to the opportunities for a better job.

Maintaining of the "pioneering" spirit among the members.

"It should be the aim of the society that wherever refrigerating engineering is going, the American Society of Refrigerating Engineers shall be ready to go also," he concluded.

Following Col. Field's address, L. S. Morse of York Ice Machinery Corp., a former president of the society, arose to speak for the society in commendation of the retiring president's work in behalf of the society.

IS GIVEN GIFT

Through the efforts of Col. Field, who traveled about the country visiting local sections and who gave a great share of his time to the society's affairs, the organization gained in every way—increased membership, increased prestige, and in the support of its veteran members, Mr. Morse declared.

One of the retiring president's greatest contributions, said Mr. Morse, was the care he gave in planning the programs for the meet-

ings, in seeing that live subjects and good speakers were obtained, and that papers were preprinted before the actual meeting. His activity in creating better programs also carried over into the section meetings, Mr. Morse stated.

Major reports made by the standards committee included:

A recommendation for approval of the Code of Minimum Requirements for Comfort Air Conditioning, developed by a joint committee of the A.S.H.V.E. and the A.S.R.E.

Proposed standard methods of rating and testing mechanically operated self-contained drinking water coolers has been developed, is now being reviewed, and is expected to be ready for approval early in 1939.

A recommendation for approval of the proposed standard methods of rating and testing refrigeration expansion valves.

LOCKER PLANT STANDARDS

Standards for locker plants have been proposed by W. E. Guest. This project is a new one and will be developed by an A.S.R.E. standards committee during 1939.

Proposed standard methods of rating and testing milk coolers is the title of a project being developed by an A.S.R.E. standards subcommittee consisting of J. E. Nicholas, J. R. McCalmont, W. M. Timmerman, E. B. Derr, R. H. Tull, W. R. Woolrich, and Mack Tucker.

Suitable standards of minimum permissible moisture in refrigerant tubing and cooling units is a project being developed by an A.S.R.E. standards subcommittee consisting of W. B. Anderson, H. A. Brysselbout, R. A. Fuller, W. A. Grant, and R. J. Thompson. The committee has developed a tentative standard and members are now making tests of it in their laboratories.

Proposed standard methods of rating and testing refrigerated trucks and buses is the project of a joint committee representing the A.S.R.E. and the Society of Automotive Engineers. The joint committee consists of W. L. Knaus, Glenn Muffy, and S. E. Hartman for the A.S.R.E., and C. O. Ball, F. W. Kateley, and E. W. Lager for the S.A.E.

The joint committee on rating commercial refrigerating equipment is a project sponsored by the American Society of Refrigerating Engineers with the active support of the Refrigerating Machinery Association, the National Electrical Manufacturers Association, the Air Conditioning Manufacturers Association, and the A.S.H.V.E.

WORK ON UNIT STANDARDS

Next meeting of this committee is scheduled for Jan. 11, with the following subjects under consideration:

a. Revision of standard methods of rating and testing mechanical condensing units to make these standard methods more generally usable.

b. Development of standard methods of rating and testing self-contained air conditioners for comfort cooling.

c. Development of standards for rating compressors.

New officers of the society for the coming year are as follows:

President: Gardner Poole, vice president of Frosted Foods, Inc.

Vice President: George Hulse, chief engineer, Safety Car Heating & Lighting Co.

Vice President: Chester Lichtenberg, engineer, General Electric Co. Treasurer: Dr. William R. Hainsworth, vice president, Servel, Inc.

New directors are: Charles S. Logan, Superior Valve & Fittings Co.; B. E. Seamon, president, Westland Engineering Supply Co., Chicago; Frank Zumbro, Frick Co.; Prof. F. C. Stewart, Pennsylvania State College; W. R. Woolrich, dean of the College of Engineering, University of Texas; and F. M. Cockrell, publisher, AIR CONDITIONING & REFRIGERATION NEWS.

York Reports Loss For Fiscal Year

(Concluded from Page 1, Column 5) liabilities were \$1,436,279, as compared with \$9,559,836 and \$2,034,671, respectively, on Sept. 30, 1937.

Income before interest and depreciation deductions this year amounted to \$625,993, compared with \$1,745,541 in 1937 and \$962,680 in 1936. Interest and depreciation for the year just ended amounted to \$352,886 and \$392,860, respectively.

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REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

SERVICE MANAGERS. Several desirable positions are available in the Middle Atlantic states. Applicants must be capable of developing and maintaining an organization to render competent service and sell service, supplies, parts, etc., to users of commercial refrigeration and air conditioning equipment. Give details of experience, present connection, salary expected, when available, etc., in your reply. All replies will be treated in strict confidence. Box 1097, Air Conditioning & Refrigeration News.

POSITIONS WANTED

DESIRE POSITION as chief draftsman or similar responsibility. Have 13 years' experience in refrigeration and air conditioning engineering with leading manufacturers. Excellent background, thorough knowledge of cooling and design. Good references. Box 1098, Air Conditioning & Refrigeration News.

AIR CONDITIONING Engineer desires engineering or sales engineering position with established company. Instructor in large air conditioning school until recently. Thorough knowledge of air distribution, fans, filters, and insulation, and good knowledge of heating and refrigerating equipment. B.S. in engineering, Northwestern, 1936. Married, excellent references. G. A. NORBERG, 5064 North Winchester, Chicago.

FRANCHISE WANTED

COMPLETE LINE of refrigerator display cases, walk-in coolers, dairy refrigerators, compressors, etc. Selling this line successfully for several decades. Interested in a real proposition for metropolitan territory. Control a good sales set-up. No need of blowing my own horn. Possess facts to prove my value to manufacturer. Box 1100, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

USED "AS IS" (any make) commercial and household compressor units, expansion coils, motors, blowers, surplus or discontinued parts. Box 1099, Air Conditioning & Refrigeration News.

REPAIR SERVICE

PRESSURE GAUGES Repaired, all types. Refrigeration, ammonia, steam, hydraulic and air. Prices: 25¢ an inch; example, 2" gauge 50¢, 2½" gauge 65¢, 3" gauge 75¢. Ammonia gauges and gauges exceeding 1,000 pounds 50¢ an inch. NATIONAL ELECTRIC SWITCH CO., 1966 Broadway, New York City.

CONTROL REPAIR service. Your controls repaired by expert mechanics, with special precision equipment. Supervised by graduate engineers. We stress perfection and dependability before price. One year guarantee on domestic controls. Any bellows operated device repaired. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

GENERAL ELECTRIC and Westinghouse hermetic units rebuilt. Guaranteed unconditionally for one year and returned to you finished like new. Units are entirely disassembled in our large modern shop, tested through every step of production during rebuilding with the most complete test equipment for accurate work, then subjected to exhaustive running tests under actual operating conditions. Each unit measures to exacting standards after rebuilding. Prices \$30.00 on General Electric DR-1, DR-2, and Westinghouse; \$35.00 on General Electric DR-3. Quotations furnished on other models. Quick service—guaranteed work. REFRIGERATION MAINTENANCE CORP., 321-27 East Grand Ave., Chicago.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Holders of Grigsby-Grunow Bonds Get 15% Payment

CHICAGO—Checks covering 15% of the par value of their bonds have been sent to holders of first mortgage convertible 6% sinking fund gold bonds of Grigsby-Grunow Co., reports James O. Carr, chairman of the bondholders' committee. This is the third dividend paid to creditors.

Only remaining assets of the bankrupt estate consist of certain portions of the Dickens Ave. plant lying east of Austin Ave. in Chicago, Mr. Carr reports. It is hoped that a substantial amount will be realized for this property, but under present conditions it appears that liquidation may take some time.

Delay in declaring the present dividend has been largely due to the controversy with the U. S. Treasury.